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**B-24 Liberator**

**B-25 Mitchell**

**B-26 Marauder**

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**Consolidated B-24 Liberator  
North American B-25 Mitchell  
Martin B-26 Marauder**

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[edizionirei@outlook.com](mailto:edizionirei@outlook.com)

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## **Consolidated B-24 Liberator**

The Consolidated B-24 Liberator was a four-engine heavy bomber to medium-high wing (wing adopted a type known as a winger Davis, narrow and elongated, which became a distinctive feature comes along with the double oval). The B-24 was originally developed and produced by the US Consolidated Aircraft in the first half of the forties, and during the war, was built under license by other companies such as Douglas, Ford, and North American. The Liberator was one of the most important American bombers. He finished the war as the plane from the US war constructed in as many examples in history. It more than 18,000 copies were built. It was, along with the B-17 Flying Fortress, the flagship bomber of the United States Army Air Force.

Slightly bigger, faster than the B-17 Liberator, however, he had a lower operating rate and this meant that was hit and shot down more frequently, both the flak from both fighters, despite its defensive armament consists of ten machine guns Browning M2 12.7 mm would make it a real flying fortress. His commands, however, were heavy to maneuver and the four-engine was challenging to keep in close formation. In addition, the high wing of the type Davis suffered dangerously in heavy landings and ditching, since the fuselage tended to break. The most famous mission of the Liberators was against the oil fields of Ploesti, Romania, on 1 August 1943, which ended in disaster because of the wrong sequence of waves of attack. It was used on all fronts of the Second World War, in bombing missions, maritime patrol and anti-submarine combat and shot down in the course of its missions around 2,600 enemy fighters.

## History

The project of the Consolidated B-24 Liberator was launched at the beginning of 1939 at the request of the United States Army Air Corps who wanted a more modern heavy bomber is equipped with higher performance of the B-17. It was the most widespread heavy Allied bomber, and its production (18,442 copies) was the highest ever among the bombers of World War II. It was an excellent and versatile machine, but not too much beloved by crews because unlike his predecessor B-17, which had proved incredibly robust being able to return to base with vital parts damaged severely, the B-24 was not can withstand severe damage in combat. Paradoxically, this was due to its advanced structural characteristics (especially the wing, designed with laminar profiles and high aerodynamic characteristics) that translated into an inherent weakness of the structure, which is often, if hit into strengths, he could give in completely. The Third Reich had for the first time to face these powerful war machines in 1943. For months the Luftwaffe had provided intelligence information to pilots of these four-engined, in spite of this, contrary to what you think, the single-seater fighter Messerschmitt Bf 109 no They managed to shoot them down in quantity without suffering serious losses. The Germans even came to equip the fighters with small charges (50 kg) and to bomb the flocks of bombers to be able to stop them. It was used by the US armed forces and some allied air forces during the war virtually everywhere, from Europe to the Pacific. The Liberator is often compared with the contemporary Boeing B-17 Flying Fortress, with respect to which it had a higher top speed and range to practically equal military and defensive armament load. In general, however, the crews and military leaders preferred the Flying Fortress for greater robustness, the Liberator caught fire more easily if hit on account of the tanks in the back of the fuselage. In addition, the Flying Fortress was easier to drive so it was easier to keep training. In 1938 the United States Army Air Corps (USAAC) Consolidated asked to produce the Boeing B-17 Flying Fortress as part of the plan to strengthen the war effort called Project A.



The president of Consolidated Reuben Fleet after his visit to Seattle Boeing plant all'USAAC proposed an alternative project to the Flying Fortress. In January of 1939

the USAAC with specific C-212 asked formally to Consolidated to design a four-engine bomber with an autonomy of 3,000 miles (4,827 kilometers), top speed of 300 mp / h (483 km / h), the share of tangency 35,000 ft (10,668 meters) and full war of 8000 lb (3,629 kg). The March 30, 1939 was signed the contract which foresaw the completion of the first prototype by the end of the year. The project, called the Consolidated Model 32, was conceptually modern but technically simple. Compared to the Flying Fortress, the Model 32 was a higher load capacity, a shorter fuselage and a wing of greater wingspan of 1.80 meters but less than 25% as a surface. While the Flying Fortress used radial engines Wright R-1820 Cyclone nine-cylinder, for the Model 32 were expected the Pratt & Whitney R-1830 Twin Wasp double star of seven cylinders with one an output of 1,000 hp. The maximum takeoff weight expected for the Model 32 was 32,000 kg, one of the existing at the time heavy aircraft. For the Model 32 it was decided to use one wing very long and thin and a tail with twin drift similar to those used sull'idrovolante hard line twin-engine Consolidated Model 31. The Model 32 was the first American bomber to have a tricycle gear , a feature that allowed a shorter take-off run and facilitated the maneuvers on the ground. The tests in the wind tunnel and with a Model 31 provided a large amount of data on the behavior in flight of the new wing at high elongation named Davis.

Consolidated completed the prototype, called XB-24, which flew for the first time twenty-nine in December 1939 from Lindbergh Field in San Diego with a test pilot at the controls of the Consolidated William Wheatley. The first tests quickly showed the clear superiority XB-24 on the B-17 as the speed and range. Even before the first flight XB-24 had arrived the first orders, in addition to the first order of August of 1939 by dell'USAAC for thirty-six planes also one of 120 for the Armée de l'Air and another of 164 for the RAF, already engaged in the war against Germany. In 1940 it was built seven YB-24 and began preparations for the series production. The first B-24 products went to the RAF, including those ordered dall'Armée de l'Air, for now, France was occupied by the Germans. The RAF Liberator chose the name in reference to the fact that it would be used to fight the Germans to liberate Europe. The USAAC decided to use the same name. Following the Consolidated built in limited numbers the version B-24C with turbocharged engines instead of turbocharged, distinguishable from the oval-shaped gondolas crushed also typical of all subsequent versions of the Liberator. The first version produced in large numbers was the B-24D, called Liberator III in the RAF, with greater fuel capacity, a defensive armament of ten guns and a maximum takeoff weight of 27,000 kg, comparable with the British Short Stirling, Handley-Page Halifax and Avro Lancaster. To increase the production of the Liberator Consolidated tripled the size of its plant in San Diego in California, and he built another in Forth Worth in Texas. The B-24 were also constructed from Douglas in Tulsa in Oklahoma, by North American in Dallas, Texas and Ford at Willow Run near Detroit, in a facility built specifically from the surface of 330,000 m<sup>2</sup> which reached a production of 428 Liberator per month.





Different plants were identified by a code:

- Consolidated / San Diego, CO.
- Consolidated / Fort Worth, CF.
- Ford / Willow Run, FO.
- North American / Dallas, NT.
- Douglas / Tulsa, DT.

In 1943 he entered service the new B-24H version with stretched fuselage 25 cm, autopilot, targeting systems and fuel transfer improved and a turret on the face to improve defense against frontal attacks of enemy fighters. The B-24H were produced by Consolidated, by Douglas and by Ford while the North American produced the B-24G, a slightly different version. All of these companies in August 1943 passed to produce the new version B-24J slightly different.



The later B-24L and B-24M were lighter and with different defensive armament. During the war the variety of versions of the Liberator and the differences between air version of the same products from different companies caused more and more problems of logistic support, especially for the spare parts management. In the summer of 1944, North American, Douglas and the establishment of Consolidated Fort Worth stopped producing the Liberator, production continued at the factories of Consolidated San



Diego and Ford at Willow Run, this reduced the logistical support problems. Were produced a total of 18,482 B-24 until September 1945. Some 12,000 Liberator entered service nell'United States Army Air Forces, the United States Navy received about a thousand PB4Y-1 and 739 PBAY-2 Privateer, the RAF received about 2,100 B-24 that were used by 46 groups and 41 bomber squadron, the RCAF 1,200 B-24J, the RAAF 287 between B-24J, B-24L and B-24M and took two SAAF squadron of B-24 in the Mediterranean.



## Use

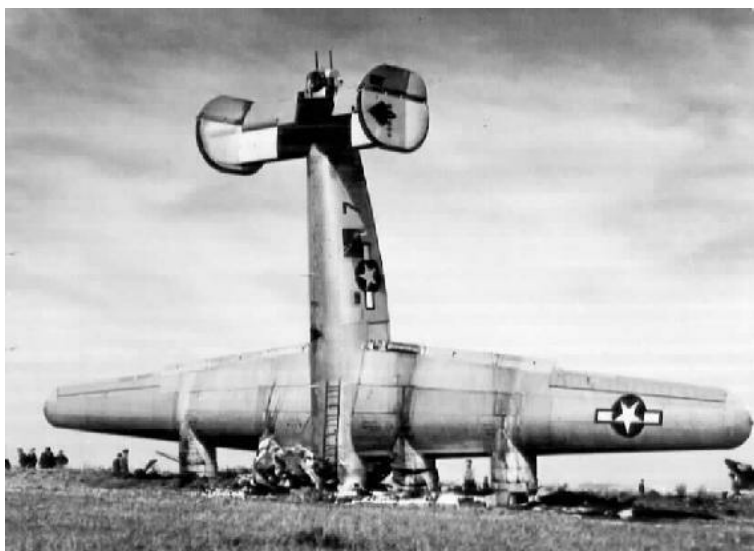
The USAAF received the first eight B-24A in the summer of 1941, and used them initially as transport aircraft. Two B-24A were modified for long range reconnaissance missions on Japanese bases in the Pacific Islands; these missions were then canceled because of the attack on Pearl Harbor, which was also destroyed one of these two aircraft. The first fifteen LB-30 were assigned to the 19th Bomb Group in Java in January 1942, then to the other seventeen 6th BG in Panama and three in the Composite Group in Alaska for anti-ship missions. Some LB-30 were then converted into unarmed transport aircraft with nose and tail entirely metallic and cargo door on the left side of the fuselage. On June 6, 1942 four B-24 departed from Midway to bomb the Wake atoll occupied by the Japanese, but they did not find the goal. The June 12, 1942 thirteen B-24 from Egypt parties bombed the refineries and fuel depots of Ploiesti in Romania.

The first B-24 was shot down on Europe February 26, 1943, he was the 41-23777 "Maisey" of the 44th Bomb Group in bombing mission over Bremen, shot down by the Messerschmitt Bf-109 piloted by Lieutenant Heinz Knoke (which ended the war with thirty-one wins) belonging to JG1.

Only two of the eleven men on board were saved, among the victims also the journalist Robert B. Post New York Times on board as a war correspondent. During the subsequent years of the war, the B-24 were used in all theaters of operations from Europe to Southeast Asia, including the Atlantic and Pacific where he was often preferred to Flying Fortress for greater range and smaller logistics support requirements. The Liberator was widely used for strategic bombing missions over Europe dall'8th Air Force USAAF starting from bases in the UK, from the 9th Air Force base in Africa and then also from the 15th Air Force based in Italy, which had thirteen groups of eighteen equipped with B-24. Altogether thousands of Liberator USAAF dropped tens of thousands of tons of bombs on military and industrial targets. On 1 August 1943 178 B-24 they were used for the second attack on the refineries and fuel depots of Ploiesti in Romania called Operation Tidal Wave.



The USAAF came to have in service 6,043 B-24 in September 1944. The Liberator of the US Navy participated in the Battle of the Atlantic, the US Navy also employed a large number of B-24s and 977 PB4Y-1 to escort convoys and run anti-ship and anti-submarine patrols in the Pacific. After the war ended many B-24 were used as transport aircraft in the world; in the Far East it was widely used to transport supplies needed for the reconstruction of China, Japan and the Philippines. Only a B-24 was officially handed over to the USSR under the law Rentals & Loans. It was on a plane smarritosi Yakutsk while serving a government mission to the Soviet Union, in November 1942. But well 73 Liberators of various models who had made emergency landings on European airports, were recovered by the Soviets. Thirty of these aircraft were repaired and put into condition to fly and assigned to the 45th BAD. The first six LB-30A (AM258-263) were delivered to the United Kingdom in December 1940 in Montreal. For limited defensive armament and the absence of self-sealing tanks they were considered unfit for combat, unarmed and used by the British Overseas Airways Corporation (BOAC) for transport on the North Atlantic route and the connections between the United Kingdom and Egypt through over the Atlantic to get around occupied Europe and Spain, neutral but pro-German. The first mission in March 1941 transport was to bring in the US American pilots who had led the Liberator in the UK. The Liberator were employed by the RAF as well as transport aircraft for the evacuation of Java. The first Liberator B Mk I were employed by the RAF Coastal Command for anti-submarine patrols over the Atlantic. Later, again in 1941, they entered service with the RAF the first Liberator II, equipped with self-sealing tanks, turrets and elongated front fuselage to increase the space for the crew. The Liberator II were assigned to Coastal Command and Bomber Command. A Liberator edited was used as VIP transport by Winston Churchill. Two squadrons of Liberator II were transferred to the Middle East in early 1942 and used for the first time as bombers. The Bomber Command RAF did not use as the Liberator bombers over Europe, but the 223rd Squadron of the 100th Bomber Group Support equipped with winds changed Liberator with electronic warfare systems was used to jam enemy radar. For their coverage of the Liberator were also used for maritime patrol and anti-submarine anti-ship, reconnaissance, transport people, materials and fuel. Since the beginning of the war for the United Kingdom were vital supplies sent from the United States by sea across the Atlantic. The German submarines (U-boats) attacked these convoys, and had the advantage that the central part of the ocean was outside the scope of allied aircraft based in Europe and North America, in that vast area, defined by Mid-Atlantic gap allies, the only defense for the convoys were the escort ships, but they were not effective possible actions to counteract looking for and destroying U-boats at sea. In 1941 in the 120th Squadron of Coastal Command entered service some Liberator modified with the removal of part of the machine guns and armor plating, additional fuel tanks in the cargo bombs, radar ASV Mark II and Leigh headlights to search for U-boats at night. These Liberator had a range sufficient to cover the Mid-Atlantic gap and they were therefore able to escort the convoys and perform anti-submarine patrols. Following other squadron of RAF base in the UK and Iceland and some of the RCAF base in Canada were equipped with Liberator.



The anti-submarine missions were dangerous for aircraft, especially after the U-boats were armed with anti-aircraft machine guns and changed their tactics by switching to navigate on the surface to be ready to shoot. The entry into service in mass of the Liberator in the anti-submarine squadron of several allied nations led to the allied supremacy in the Atlantic starting in May of 1943. Overall, the Liberator of several allied nations contributed to the destruction of 72 U-boats. The Liberator were employed by the following squadrons of the RAF:

- 53rd, 59th, 120th, 206th, and 233rd squadron 224TH the Coastal Command.
- 223rd Squadron of Bomber Command from 1944 to 1945.
- 8th Squadron of Coastal Command base in India after the war.
- 102nd Squadron of Transport Command base in Sri Lanka after the war.
- 200th squadron base of Coastal Command in Gambia after the war.

After the end of many Liberator War were used as transport aircraft in the world, some Liberator were employed by Qantas Empire Airways on the route between Colombo Sri Lanka and Perth in Australia at the time the longest direct route, as long as they were replaced by Avro Lancastrian, derived from commercial aircraft Avro Lancaster bomber. With the end of World War II the Liberator who had worked on the Indian Theatre and Indochina were concentrated in Chakeri, Uttar Pradesh (Northern India), where he was a base of the South East Asia Command). In October 1945 the US government, which had been returned to the B-24 ceded to Britain with the Lend-Lease Act, ordered its demolition. Planes on the field were 230 and had to be demolished by removing armament, on-board tools, destruction of control panels and engines, and finally drilling fuselages and destruction of trucks using bulldozers legs, however this drastic action of destruction was not carried completed on all aircraft. In 1947, having gained independence, India found it necessary to deal with Pakistan, with the Indian Air Force (IAF) that, for the bombing, he was only the C-47 Dakota tailored to use. Having an urgent need to provide themselves with modern bombers the IAF established a partnership with Hindustan Aircraft Limited (a company that had managed the maintenance of the Anglo-American planes during the war) to recover the planes still

stranded Chakuri.

Whereas establishments of HAL were in Bangalore and that the planes were not transferable by land, it was necessary to establish a center of Chakeri first level repairs that would allow you to reposition the aircraft at least to be transferred in the air for the 1,500-km were needed to arrive at Bangalore. This activity virtually demanded of "cannibalizing" an unknown number of aircraft carcasses to recover the missing pieces needed to rebuild a new Liberator. The first Liberator became available in mid-1948, when it was completed the reconstruction program in 1952, they had been rebuilt 42 aircraft.



Once transferred to Bangalore planes were completely reconditioned and brought to the operational standards of the B-24 L or J. On November 2, 1948, the first six B-24s were delivered to the IAF Squadron 5 on the airport of Poona. After this unit had the B-24 Squadron 6 (Flying Dragoons) and Squadron 16, while the Flight 102 (which had the tasks of aerial photogrammetry) received two C-87 transport version of B-24. I B-24, since the war between India and Pakistan had been blocked by a UN resolution, they remained in service only as a deterrent, and they were never used as bombers in military actions. Was used instead of a Flight 102 in the summer of 1953 C-87 to photograph the Hillary expedition had reached the summit of Everest, demonstrating the success of the climb. The Liberator were left by Squadron 5 in 1957 and 6 Squadron was transferred to the maritime reconnaissance role, then its arerei were modified by checking in an air-to-surface radar ASV 15 in the space left by the removed ventral turret. In this role, the B-24 took part in the operations against Goa (1961) and the second war with Pakistan (1965). The last B-24 was decommissioned by the IAF December 31, 1968, twenty years after it entered service.

## Operation Tidal Wave

Operation Tidal Wave was a bombing mission carried out during World War II from 178 Consolidated B-24 Liberator from five different groups Mighty 8th and 9th Air Force USAAF to destroy the oil refineries of Ploiesti in Romania, fundamental for fueling the German armed forces. The June 12, 1942 was performed a first bombing of twelve B-24D parties from the base of Fayid at the Suez Canal.



The attack had caused little damage, but it demonstrated the possibility of low-altitude raid with heavy bombers. The mission, called Project Halverston, (HALPRO) by the name of Colonel Harry Halverston that conceived it, was the first bombing run dall'USAAF Europe. Unlike HALPRO mission, the Tidal Wave operation was carefully planned. They were attended by 178 B-24, which, starting from the air base of Benghazi in Libya, flew for more than 3900 km.

Brigadier General Uzal Girard Ent was in command of the American forces during the mission, known to history as one of the most disastrous for the losses of planes and crewmen. Colonel Jacob E. Smart who was entrusted with the planning of the operation decided to attack a low altitude to avoid German radar, based on the experience of HALPRO mission. This choice was also due to the fact that during the mission had been met HALPRO a limited anti-aircraft defense. The responsibility of the operation was assigned to the 9th Air Force, for the mission were assigned five bombers groups:

- 8th Air Force:
  - 98th Bomb Group, Colonel John R. Kane.
  - 376th Bomb Group, Colonel Keith K. Compton.
- 9th Air Force:
  - 44th Bomb Group, Colonel Leon W. Johnson.
  - 93rd Bomb Group, Lt. Col. Addison E. Baker.
  - 389th Bomb Group, Colonel Jack W. Wood.



The idea was to attack the refineries in seven points almost simultaneously and to do that it needed a perfect sync in the arrival of bombers on targets. For training it was built a model of the refineries in the Libyan desert, also in July 1943 were carried out some bombing missions at low altitude on some secondary objectives. The B-24D, designed for flight at high altitude, were equipped with additional fuel tanks in the bomb bay, coming to a fuel capacity of 11,718 liters for the autonomy necessary for the mission. The attack was planned for August 1st with 178 B-24 for a total of 1,764 man crew, one of the largest forces ever assembled for a single mission. The flight plan was from Benghazi, fly over the Mediterranean and the Adriatic, the island of Corfu the mountains Pindus in Albania and southern Yugoslavia, then the planes would divide to get to Ploiesti from the north in a coordinated manner to strike all targets almost simultaneously. Unfortunately for Americans, General Alfred Gerstenberg, in command of the air defense in Romania, following the HALPRO mission, he had requested and obtained the means to realize one of the best air defense systems in Europe.



In particular around Ploiesti they were placed hundreds of anti-aircraft guns of all calibres, up to 105 mm, camouflaged in various ways, also as agricultural structures and on trains to allow fast displacement. Also it was operating a radar network connected with nearby air bases where they were available between 52 fighter Messerschmitt Bf 109 and Bf 110 fighters plus other Romanians and Bulgarians. Gerstenberg also counted on the interception centers of allied communications places in Athens, in order to have ample notice in case of air attacks from Africa parties. At 7:00 of the 1 August 1943, the aircraft began to take off from bases around Benghazi raising large amounts of dust that created visibility problems and motors, for these reasons, a plane had an accident on takeoff. The 177 aircraft arrived on the Adriatic where the plane took off 28 "Wingo Wango" piloted by Lt. Brian Flavelle belonging to the 376th BG lost control, falling into the sea. The plane 23 "Desert Lilly" piloted by Lt. Guy Lovine descended in altitude to search for any survivors. Having found that there were no survivors "Desert Lilly" because of the failed bomb and fuel load to meet the training, partly because of the total radio silence imposed for the mission. Another ten aircraft lost contact with their formations and returned to Allied air bases.

The B-24 then they reached the mountains Pindus and flew over them at a height of

3,350 m, the planes of the 93rd and 376th BG outdistanced other formations altering the schedule of the original plan of Colonel Smart requiring precise synchronization. All aircraft still maintained radio silence as ordered thereby preventing a precise coordination. At Pitesti about 105 km from Ploiesti formations began to separate himself to get on the objectives on time and on the expected directions. The 389th BG pointed it at Campina, while the others continued. Reached above Targoviste Colonel Compton exchanged a railway line for that direct in Ploiești to follow as a reference to which he pointed with his group followed by the 93rd to Bucharest against the advice of his captain Harold Wicklund navigator who had already participated in the HALPRO mission. Some aircraft broke radio silence to report the error. Despite the mistake of Colonel Compton, Baker with his "Hell's Wench" realizing the error corrected the course for the Ploiesti. Consequently, the 93rd BG was on a different route from the original planned, and still followed by the three groups remained behind. Compton became just the mistake before arriving in Bucharest and changed course by focusing on Ploiești. At 14:00 approximately 93rd BG arrived first on the lens with the enemy defenses already in alarm. The "Hell's Wench" was damaged by flak forcing Baker and his older co-pilot John L. Jerstad to drop bombs to lighten the plane to be able to continue driving training to the specific objective, the refinery Columbia Aquila. Exceeded the target, Baker and Jerstad managed to keep the "Hell's Wench" nose-up in flight to allow the rest of the crew to bail out.

For this action were decorated with a medal of honor to the memory. The greater Ramsay D. Potts of "The Duchess" and Major George S. Brown of "Queenie" encountered dense clouds of smoke over the Columbia Eagle refinery and two other aircraft carriers, with the 93rd BG who dropped their bombs on Columbia Aquila refineries , Astra Romana and Unirea Orion. During this attack the 93rd BG lost eleven aerei. Giunto of Ploiesti, General Ent decided that the defenses of American Romana refinery, expected target for the 376th BG, were too dangerous and ordered Compton to attack the refinery Steaua Romana Campina, which was the target of the 389th BG coming from the east. Five aircraft of the 376th BG went to the refinery Concordia Vega already under attack. In Campina the anti-aircraft batteries placed on the surrounding hills were able to fire on planes from above, also the B24 were attacked by fighter IAR 80 Romanians. While the 93rd and 376th BG were already in action, the 44th BG Colonel Leon W. Johnson, and the 98th BG of Colonel John R. Kane veered over Floresti to aim towards achieving their targets, refineries Columbia Aquila and Auction Romana. Both formations were flying at low altitude along the Floresti-Ploiești railway trains for which they encountered armed with flak. Flying just above the level of the trees about fifteen meters above the ground, the 44th BG on the right and the 98th BG on the left, it was possible to machine-gun the B24 to respond to enemy fire by disabling the engine and procuring many casualties among German soldiers. Despite the effects of the attack of the 93rd and 376th BG making it more difficult to recognize the targets, Johnson and Kane continued to fly at low altitude towards the goal direct driving their formations along the planned route suffering heavy losses while the gunners were firing on positions of antiaircraft . For this action were both decorated with the medal of onore. Il Lieutenant Colonel James T. Posey drove twenty-one of the 44th BG planes in

an attack on the refinery Creditul Minier south of Ploiesti flying at very low altitude and keeping the training despite the load of bombs and the flak. The last attack was led by the 389th BG Colonel Jack W. Wood Steaua Romana refinery. Four Liberator of the 389th BG were shot down, including the "Ole Kickapoo" piloted by Lt. Lloyd Herbert Hughes of only twenty-two. The plane was leaking fuel that caught fire as a result of the explosions, Hughes was able to take him up on the lens to drop bombs and then attempted a crash landing in a river bed. Hughes and five crewmen were killed, while two, the navigator Lieutenant Sidney A. Pear and Lieutenant bomber John A. McLoughlin, seriously injured died later while two gunners, sergeants Albert Thomas Hoff and Edmund H. Smith, succeeded to escape and were captured. Hughes was awarded the medal of honor to the memory.



The attack lasted a total twenty-seven minutes, which was followed by another seven-hour flight to the return, in the best case: some planes landed fourteen hours after the departure from Benghazi, as was a B-24 badly damaged. Of the 177 B24 parties for the mission, only 88 returned to Benghazi, and of these only 33 were under operating conditions the following day. 53 planes were shot down, including 44 by flak. Some aircraft fell in the Mediterranean during the return flight, others returned on other Allied bases such as RAF base in Corfu. Others landed in Turkey, a neutral country, where the crews were interned until the end of the war. Altogether, 440 men of the crew were killed and 220 captured. For this mission they were awarded five medals of honor, the highest number ever achieved in a single USAAF mission. The B24 "Brewery Wagon" shot down during the attack in Ploiești was then repaired and used by aviation Romanian as air freight.

The bombing caused serious damage to the refineries of Ploiești, but not their total destruction. Gerstenberg over the defense had also planned management of the refineries that normally worked at rates lower than the maximum possible.

The allies estimated that the production of Ploiești refineries had been reduced by 66% due to the attack, but in a few weeks the majority of the damage was repaired and the production returned to previous levels, except for the Steaua Romana Campina that It had been the most damaged and was out of action until the end of the war. The Ploiesti refineries were again attacked several times by the bombers of the 15th Air Force in 1944 but with bombing from high altitude. In August 1944, the Red Army troops conquered Romania thus blocking fuel supplies to the Germans.

## Technology

The Liberator heavy bomber was a four-engine high-wing and empennage of a double tail derives disc. The entire wing was used as the fuel tank. At the center of the fuselage, the Liberator had a hold for bombs on the capacity of 3,630 kg: the launch bay was divided into two parts, front and rear, further divided by an internal passageway that was part of the supporting fuselage structure.

The hold bombs had sliding doors opening that were part of the fuselage limiting the aerodynamic resistance and thus allowing a greater speed during the passage over the lens. The payload could be made up of four 907 kg bombs, 8 bombs from 454 kg, 12 bombs from 227 kg or 20 bombs to 45.4 kg. The engines were Pratt & Whitney R-1830 Twin Wasp double star of seven cylinders each with an output of 1,000 hp.



The cart was tricycle with single-wheel main landing falling in the wings and nose gear single wheel falling in the nose. Access to the crew was in the back of the plane, to get to the cockpit internal flow was very tight for people wearing a parachute, this compromised the possibility of escape in case it was necessary to jump from the plane in flight because it was the only way out. For this reason, the Liberator was sometimes nicknamed "The Flying Coffin" (the coffin steering wheel). Despite this, at the end of the war statistics they showed that in proportion to the executed missions there were greater losses among the B-17 crews of the B-24. A measure of combat activity carried out by the B-24 is given by the relative to its use on the Pacific statistics: in three years, the Consolidated bombers dropped 635,000 tons of bombs, while his crews declared the killing of 4,189 Japanese planes.

## **Versions**

The Liberator, realized in many versions and variants derived, was used by the air forces of different nations.

### **XB-24 (Consolidated Model 32)**

This is the prototype, designed in 1938 and ordained in March 1939. On 29 December the same year, the aircraft, with military matriculation 39-556, made its first flight. The plane had radial engines Pratt & Whitney R-1830-33 to 1,000 hp, the Davis wing high elongation, resulting split disc and tricycle landing gear. The maximum take-off weight was 17,370 kg. It was used in test flights by Consolidated and dall'USAAC until June 9, 1940, and accepted dall'USAAC August 13 of that year. He could carry a load of 8,000 pounds (3,600 kg) of bombs inside its fuselage capable and had an armament of six 0.30-inch Browning machine guns (7.62 mm).

### **YB-24 (LB-30A)**

Pre-series version ordered tests April 27, 1939, before the XB-24 project was complete. Quite similar all'XB-24, however, showed some differences, such as the elimination of the slat on the wing leading edges and the introduction of anti-icing systems consisting of inflatable rubber sheaths. Were built seven aircraft of this version, six of which later transferred to the Royal Air Force who named them LB-30A.

### **B-24**

Seventh YB-24 (military serial 40-702), was the only example all'USAAC delivered in May 1941 and used for testing.

## **B-24A (LB-30B)**

This is the first version of bomber series, ordered even before the first flight XB-24, because of the urgent need for heavy bombers. In general, it had some aerodynamic improvements that allow better performance, R1830-33C4-6 engines, a top speed of 450 km / h and a service ceiling of 8,230 meters. The armament consisted of six M2 12.7 mm machine guns, one in front, one in the ventral position, one in each lateral position and two at the rear. The Liberator was the first American aircraft with defensive armament in the queue.

Twenty-eight planes were built in this release, twenty of which transferred to the RAF which he called LB-30B them.

## **XB-24B**

Version realized following the inability XB-24 to reach the maximum required speed. For this reason, turbocharged engines were mounted Pratt & Whitney R-1830-41 to 1,200 hp, recognizable by elliptical gondolas. In addition, the wing was replaced (fully used as a reservoir) with a self-sealing tanks and introduced a new wider tail than two feet floor. The maximum take-off weight was 18,594 kg. The first flight after the changes took place on 1 February 1941. The new engines allowed a top speed of 59 km / h, with an overall improvement in performance at high altitude. Subsequently, the engines were replaced with the most reliable Pratt & Whitney R-1830-43 from 1,200 hp. The plane was later renamed XB-24B and risiglato 39-680.

## **B-24C**

New version bomber, similar to the B-24A but with new engines Pratt & Whitney R-1830-41 to 1,200 hp. The defensive armament consisted of a new tail Emerson turret A-6 with a pair of machine guns Browning M2 12.7 mm and a dorsal turret Martin A-3 with two machine guns behind the cab in addition to the individual machine guns in the nose and in the stations ventral and lateral. At the same time, the radiators for cooling the oil had been moved on the sides of the fuselage-engine from the previous front-inferior position, giving the passenger compartment of the motor-Liberator that characteristic elliptical shape that noticeable when viewed from the front. Nine B-24A were converted to B-24C, the last was delivered in February 1942.

They were only used for testing and training.

## **B-24D**

Before bomber version produced in large series in January 1942. Similar to the B-24C, but with supercharged engines Pratt & Whitney R-1830-43 from 1,200-hp with Hamilton Standard propellers of 3.53 meters, maximum speed 303 miles / h (488 km / h) at an altitude of 25,000 feet (7,620 meters), against 292 miles / h (470 km / h) at 15,000 feet



(4,570 meters) model B 24 A. The armament now consisting of 10 machine guns from 0.50 inches (12.7 mm) and the offensive load, 4,000 pounds (1,814 kg) was brought to 8,800 (3,990 kg). Pure flying range was increased by 650 miles (1046 km) and brought to 2850 miles (4587 km). From the 77th individual (military serial 41-11587) the ventral position was replaced by a Bendix turret with two machine guns M2 remotely controlled by a gunner who saw through a periscope. This often caused problems of disorientation so after 287 flight products is returned to the ventral position from which 42-41164 was replaced by a spherical turret Sperry with two M2 machine guns similar to the dorsal retractable into the fuselage for reducing the aerodynamic resistance and the risk of a collision with the ground on landing. The B-24D manufactured by Consolidated of Fort Worth were all without ventral turret. The last B-24D products had a machine gun on each side of the muzzle in addition to the one at the center. They were built a total of 2,696 B-24D, 2,381 from the Consolidated San Diego, 305 by Consolidated of Fort Worth and 10 from Douglas Tulsa. To improve the defense against frontal attacks of enemy fighters some B-24D already in service were modified to the maintenance center USAAF in Hawaii with a tail turret A-6 located in the nose, following a similar change but improved with the location shift bomber was performed on other B-24D to the maintenance center of Oklahoma City.

### **B-24E**

Bomber version similar to the B-24D produced by Ford at Willow Run. Unlike the B-24D had the ventral position with a machine gun of the previous versions and engines Pratt & Whitney R-1830-65. Like the most recent B-24D had the three M2 machine guns in the nose. The USAAF employed the B-24E mainly in training missions since it was technically less modern B-24D. They were built 801 aircraft of this version.

### **XB-24F**

Designation Refers to the conversion Carried out on a single B-24D, to test a new de-icing system with heaters in place of inflatable rubber sheaths.

### **B-24G**

Bomber version similar to the B-24D produced by North American in Dallas since March of 1943. The first 25 cars were completely identical to the B-24 D, but the 430 that were built in the second half showed up with the front section of the fuselage redesigned, with a bow turret housing two twin machine guns from 0.50 inches (12.7 mm). This change proved very useful actions in Europe, where German fighters attacked frontally.

### **B-24G-1**

Version bomber manufactured by North American in Dallas similar to the B-24H,

differed from the B-24G for a front turret Emerson A-6 in place of the moveable machine guns in the nose. Were built 405 aircraft of this version, the first one was released on November 3, 1943. No B-24G-1 was assigned all'8th Air Force, most were used in the Mediterranean Sea.

## **B-24H**

Because of the vulnerability to frontal attacks demonstrated in combat, Ford designed a new version of the Liberator with a front turret with two Browning M2 12.7 mm machine guns, usually a modified version of the tail turret Emerson A-15. To install the new tower were required many modifications to the front of the fuselage structure including the redesign of the bomber station and the nose landing gear doors. Was also modified the tail turret A-6B with larger windows to improve visibility, the dorsal turret was replaced A-3C with an A-3D of increased height and move the positions of the side of the fuselage to avoid gunners in combat interference. 3,100 planes were built in this release, the first one was released in August 1943.

## **B-24J**

Version very similar to the bombing B-24H but with a tail turret A-6 located in the nose, because of the shortage of Emerson A-15 turrets. The B-24J had a new autopilot C-1 and a pointing system for the release of the M-1 bombs. The B-24H built or upgraded with C-1 autopilot and an M-1 targeting system they were named B-24J. The B-24J were produced by Consolidated in San Diego and Fort Worth, from September 1943 by Ford at Willow Run, from April of 1944 by the North American in Dallas and since May 1944 by Douglas in Tulsa. Despite being referred to as the same version, depending on the manufacturer and the availability of different types of turrets B-24J were produced with front turret Consolidated A-6 or A-15 Emerson, some with dorsal turret A-3C and the other with A-3D, and some with Caudal M-6A turret. 6,678 planes were built in this release, the first one was released in August 1943.

## **XB-24K**

Name used for the conversion carried out by Ford on a B-24D, to test a new drift similar to that of the B-23 Dragon. The plane was more stable and easy to fly previous versions double drift, but adopts the modification for the production of the series would have required times and excessive costs. The XB-24K derived the project PB4Y-2 for the US Navy.

## **B-24L**

By bombardment light version with the ventral turret Sperry replaced from a location with a pair of M2 Browning machine guns 12.7mm moveable turret and the caudal A-6B replaced by a lighter M-6A of about 90 kg. The B-24L had a window on each side of the

muzzle to give more visibility to the navigator. On USAAF order of 10 July 1944 the B-24L of the last production series were delivered to departments without tail armament, at the base were installed a turret A-6B (190 aircraft), an M-6A (41 aircraft) or pair of M2 12.7mm machine guns PTZ (186 aircraft). They were built 1,667 aircraft of this version, from 417 Consolidated in San Diego and 1,250 by Ford at Willow Run.

## **B-24M**

Bomber version further lightened with A-6B tail turret of a new lighter version and side stations open without doors. She had a new windscreen for enhanced visibility and a window on each side of the muzzle to give more visibility to the navigator. This was the final production version of the Liberator, the last flew products directly from the factory to recycling centers. 2,593 planes were built in this version from December 1944 to June 1945, 916 by Consolidated in San Diego and 1,677 by Ford at Willow Run.

## **XB-24N**

Prototype of a new bomber version derived from the B-24J with single stems and new front and tail turrets. Were ordered 5,168 B-24N but the order was canceled May 31, 1945 because they were no longer needed for the war. It was produced only one XB-24N.

## **YB-24N**

Seven planes of preproduction for the expected version B-24N.

## **XB-24P**

A B-24D converted from the Sperry Gyroscope Company in prototype to test a new fire control system.

## **XB-24Q**

A B-24L converted from General Electric in prototype to test a new radar control tail turret.

## **XB-41**

It was an escort bomber version designed to escort bombers in the absence of hunting with adequate autonomy. The XB-41 prototype, converted from a B-24D, was completed in 1942. The XB-41 had fourteen M2 machine guns 12.7 mm, for the addition of a front and a second turret Bendix dorsal turret Martin about half of the fuselage. The tests began in 1942 and concluded the following year gave sharply negative. The XB-41 due to the weight of the Liberator was slower discharges that would not have been able

to escort them on the return trip if not slowing the formation making it more vulnerable. As a result, the project was canceled.

### **TB-24 (AT-22)**

The C-87 trainer version used for the flight engineer training.

### **RB-24L**

By training version derived from the B-24L developed for the training of gunners of the Boeing B-29 Superfortress with a remote control system of identical turrets.

### **TB-24L**

RB-24L similar but equipped with radar.

### **C-87 Liberator Express**

Transport versions for twenty passengers.

### **C-87A**

VIP transport version with engines Pratt & Whitney R-1830-45 and places to sixteen passengers.

### **C-87B**

By armed portable version with a dorsal and ventral turrets and machine guns in the nose designed but not produced.

### **C-87C**

Date Tag dall'USAAF all'RY-3.

### **XF-7**

Prototype of the F-7 photographic reconnaissance version obtained from the conversion of the B-24D 41-11653 with eleven photographic equipment including muzzle, hold bombs and rear fuselage.

### **F-7A**

By photographic reconnaissance version derived from the B-24J which also kept the entire defensive armament, he had three photographic equipment in the nose three bombs

in the hold. They were built 182 aircraft of this version.

## **F-7B**

By photographic reconnaissance version derived from the B-24J which also kept the entire defensive armament, he had six photographic equipment in the cargo bombs. They were built 32 aircraft of this version.

## **PB4Y-1**

B-24D for the US Navy with spherical front turret ERCO. They were built 977 aircraft of this version in San Diego. Liberator of other B-24G versions, J, L and M received later by the US Navy were designated by the acronym.

## **PB4Y-1P**

By photographic reconnaissance version derived from PB4Y-1.

## **PB4Y-2 Privateer**

Maritime patrol version for the US Navy.

## **RY-1**

Navy designation for the C-87A.

## **RY-2**

Navy designation for the C-87.

## **RY-3**

Transport versions derived from PB4Y-2 Privateer.

## **LB-30A**

YB-24A assigned to the RAF, had Pratt & Whitney R-1830-33-C4-G engines of 1,200 hp, a top speed of 450 km / h and a maximum operating altitude of 8,230 meters. They were armed with six machine guns 7.62 mm, in a snout, in a ventral position, one in each lateral position and two in the queue. The queuing station could be closed by a pair of sliding doors.

## **Liberator B Mk I**

Twenty B-24A used by Coastal Command signed AM910-929. They were delivered in the summer of 1941 in Montreal and were armed like the LB-30A. Some were assigned to the 120th Squadron of Coastal Command and edited with radar ASV (Anti surface Vessel) MkII and four 20mm cannons under the forward fuselage for anti-submarine missions.

### **Liberator B Mk II**

Before bomber version for the RAF with elongated snout of about ninety centimeters deeper rear fuselage, larger tailplane and new Curtiss Electric propellers. It was quite similar to the B-24C but with defensive armament and other UK production equipment. The defensive armament consisted of a dorsal turret to about half of the fuselage and a Boulton-Paul caudal with four 7.62 mm machine guns, a pair in the ventral position and single machine guns in the nose and in the lateral positions. The first Liberator B Mk II (AL503) fell during the flight acceptance June 2, 1941, died in the accident all the crewmen including the test of Consolidated William Wheatley. The investigation lasted two months and ruled that the case was too slow a bolt that had blocked the elevator. Deliveries began so only in August 1941, two months behind schedule. They were built 165 aircraft of this version. After the attack on Pearl Harbor the USAAF received 79 Liberator B Mk II originally intended for the RAF with defensive armament modified with a pair of moveable M2 machine guns in the tail and a dorsal turret A-3 with two single machine guns M2 machine guns in the nose and in the lateral and ventral positions. Six were lost to accidents in the first six weeks, 23 were later sold to the RAF and the USAAF 46 remained. Some Liberator B Mk II were then converted into transport aircraft unarmed denominated LB-30 dall'USAAF.

### **Liberator B Mk III**

By bombardment version for the RAF derived from the B-24D with a 7.62 mm machine gun in the nose, two in each side and four in a caudal position turret Boulton Paul similar to that of Lancaster and other British production equipment. He also had the dorsal turret Martincon two M2 12.7mm machine guns. They were built 156 aircraft of this version. Some were modified by the Coastal Command for anti-submarine missions with a lighthouse Leigh five million candles on right wing and armed with eight unguided rockets mounted on suitable structures on either side of the lower fuselage.

### **Liberator B Mk IIIA**

RAF designation of B-24D received from the USA. Eleven aircraft delivered in 1942 directly to the Coastal Command.

### **Liberator B Mk IV**

Name provided by the RAF for the B-24E, but it is not ever having been received from



the USA.

### **Liberator B Mk V**

Bomber version for the RAF derived from the B-24D with greater capacity and lower fuel tanks armor to compensate for the increase in weight. The defensive armament was the same as the Liberator B Mk III.

### **Liberator B Mk VI**

RAF designation of B-24H received from the USA.  
They had Boulton Paul tail turret with four 7.62 mm machine guns.

### **Liberator B Mk VII**

RAF designation of B-24J received from the USA.

### **Liberator GR Mk V**

B-24D modified by the Coastal Command for anti-submarine missions with search radar under the nose and a lighthouse Leigh five million candles on right wing, some were armed with eight unguided rockets mounted on suitable structures on either side of the lower fuselage.  
Nineteen aircraft supplied to the RCAF.

### **Liberator GR Mk VI**

B-24G, H and J used by the Coastal Command for long-range reconnaissance.

### **Liberator GR Mk VIII**

B-24J modified by the Coastal Command for anti-submarine missions.

## **Liberator C Mk VI**

Liberator B Mk VIII converted to cargo planes.

## **Liberator C Mk VII**

RAF designation of C-87.

## **Liberator C Mk VIII**

Liberator G Mk VIII converted to cargo planes.

## **Liberator C Mk IX**

RAF designation of RY-3 / C-87C.

## **Technical features**

### **Dimensions and weights**

- Length: 20,60 meters
- Wingspan: 33.50 meters
- Height: 5.50 meters
- Wing area: 97.40 m<sup>2</sup>
- Empty weight: 16,590 kg
- Load weight: 25,000 kg
- Maximum takeoff weight: 29,500 kg

### **Propulsion**

- Engine: 4 radial Pratt & Whitney R-1830-65 to 14 cylinders
- Power: 1,200 hp (895 kW) each

### **Performance**

- Maximum speed: 488 km / h
- Cruising speed: 346 km / h
- Stall speed: 153 km / h
- climb speed: 5.2 m / sec
- Autonomy: 5,900 km
- Tangent: 8,500 meters

### **Armament**

- Machine guns: 10 Browning M2 caliber 12.7 mm
- Bombs: 9,100 kg

### **Crew**

11 men:

- pilot
- co-pilot
- navigator
- bomber
- radio operator
- turret gunner in the nose
- upper turret gunner
- ventral gunner turret

- Central gunners (2)
- tail gunner

## B-32 Dominator

The Consolidated B-32 Dominator was a strategic bomber, four-engine propeller-driven and high-wing, developed by the US Air Force Consolidated Aircraft in the early forties. Produced since 1942 and designed to replace the earlier B-24 Liberator, the B-32 was also designed to be the "spare tire" of the USAF, in the case of the advanced failure, and therefore risky, program that was to lead production of the B-29 Superfortress. Compared to the latter, the B-32 had technological un'estremizzazione less thrust, with a more conservative design that yields similar to the above B-24, while being much enlarged and strengthened, and equipped with single stems, as in If the Consolidated PB4Y-2 Privateer. Built in only 115 copies, it was not very successful in the few military operations of World War II which he took part, proving a tough opponent for the Japanese fighter, but also prone to fatal accidents. Despite the flaws, the B-32 was still in the camp of aircraft of World War II, a model second in power only to the B-29 and with characteristics very similar to it. The design of the B-29 Superfortress began in mid 1938. In June 1940 the USAAF asked the Consolidated an alternative project as a reserve in case of problems in the development of the B-29. The Consolidated proposed the Model 33 derived from the B-24, a similar project although larger in size, and as the B-24 was characterized from the wing Davis high elongation, by an empennage equipped with two disc drifts and doors of the sliding cargo bombs, but the fuselage was larger, with a circular section, and the muzzle was rounded. Propulsion engines were provided Wright R-3350 Super Cyclone 2,200 hp with three-blade propellers Curtiss Electric, the same as the B-29, pressurized cabin and a defensive armament based on fourteen machine guns Browning M2 .50 caliber (12.7 mm) in remote controlled turrets, all for the total expected weight of 45,814 kg. The USAAF signed a contract for three XB-32 prototypes September 6, 1940, the same day the order for the XB-29 prototype of the Boeing.



The first XB-32 (41-141) was built at the plant of the Consolidated Forth Worth in Texas and flew for the first time on 7 September 1942. This first prototype was devoid of pressurization system, defensive turrets and gear doors because they gave still some

problems. The prototype had R-3350-13 engines internal gondolas and R-3350-21 external gondolas. The propellers of the inboard engines had the ability to reverse pitch to reduce the landing run. During the phase of the in-flight engine tests they gave problems due to oil leakage and inadequate cooling. The XB-32 "41-141" came equipped with eight 12.7 mm machine guns in two turrets dorsal and two ventral and two 12.7 mm machine guns and a 20 mm cannon in each gondola external engine firing back controlled remotely, and a 12.7 mm machine gun in each wing outside the propellers. On 17 March 1943, the USAAF signed a supply contract for three hundred B-32 despite continued problems with the prototype. On 10 May 1943, the first XB-32 crashed on takeoff after performing testing thirty flights due to a failure to flaps. On July 2, 1943 flew for the first time the second XB-32 (41-142). After some testing the USAAF demanded a revision of the initial project that should have taken a number of changes, including a more traditional defensive armament division because of problems with towers being remote controlled.

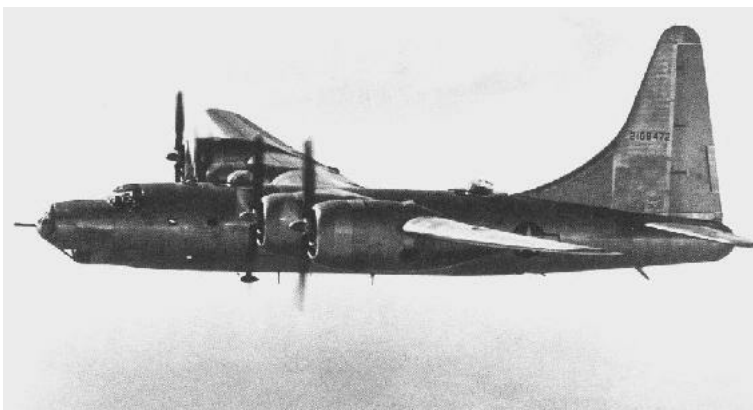
Consequently it was reduced to ten M2 12.7 mm machine guns divided as follows:

- two a front turret Sperry A-17
- two in a dorsal turret Martin A-18 behind the cab
- two in dorsal turret Martin A-18 before drifting
- two in a ventral turret Sperry retractable
- two in one caudal turret Sperry A-17.

The problems with the pressurization system were never resolved so it was decided to eliminate it for production aircraft at high altitude and not use them. The payload was increased from 1,814 kg to 9,072 kg, were also introduced a new targeting system and dropping of bombs and new quadripala propellers. The second XB-32 continued to have stability problems, to solve them after the twenty-fifth flight was mounted in a queue single fin similar to that of the B-29, but without results. The third XB-32 (41-18336) flew for the first time November 3, 1943 with a newly designed tail with 5.9 meters high stems. Consolidated initially chose the Terminator name, but in August 1944 the Technical Subcommittee on naming aircraft proposed to change it to Dominator, choice accepted by Consolidated. Later in the summer of 1945, the Assistant Secretary of State Archibald Mac Leish criticized the name calling it unsuitable for an American plane that is returned to the Terminator name immediately before cancellation of the program. Initially, the USAAF considered the B-32 as a reserve project in the event of delay or failure of the B-29, the success of the B-29 and the program delays made the B-32 no longer necessary. The USAAF plans to re-equip with the B-32 squadrons of the Eighth and Fifteenth Air Force before being transferred in the Pacific were made impossible by the delivery of only five B-32 by the end of 1944, while the B-29 it was already in full production and use by the Twelfth Air Force. The delivery of the first B-32 began when General George Kenney, commander of the Fifth Air Force and allied air forces in the Southwest Pacific went to Washington to ask for the B-29. As for the B-29, the priority was the strategic bombing the request was rejected, so Kenney said the B-32. Kenney was allowed to try out the new planes in real missions, for this was called a series of test missions and a plan to re-equip with two of the four B-32 squadron of the



312th Bomb Group, then all of Douglas A-20 Havoc . The May 12, 1945 three B-32 departed from Fort Worth direct arrived at the base in Clark Field on the island of Luzon in the Philippines, where they arrived two 24 and the third 25, and were assigned to the 386th Bomb Squadron of the 312th Bomb Group for a series of eleven test missions completed on 17 June. Crews were positively impressed by the short landing performance possible thanks to the wing Davis and the reversers pitch propellers on inboard engines. They also found several flaws: the cabin was very noisy, the provision of unsuitable equipment, the limited visual bomber. Also the plane was very heavy and fire engines were frequent. On 29 May 1945, the B-32 made the first bombing mission against a supply depot to Antatet on the island of Luzon in the Philippines. On 15 June, two B-32 dropped sixteen bombs from 907 kg of a sugar refinery in Taito on the island of Taiwan. On June 22, a B-32 attacked with bombs from 227 kg an alcohol distillery in HEITO island of Taiwan, the same day another B-32 failed with cluster bombs from 118 kg of the anti-aircraft artillery. On June 25 was the last mission carried out the attack on the bridges at Kiirun island of Taiwan. The test missions were judged generally positive, then the following July the 386th Bomb Squadron completed the transition to the B-32 and performed six more missions before the end of the war. On August 13, the 386th Bomb Squadron was transferred to Yontan Air Base, near Yomitan on the island of Okinawa, to perform photographic reconnaissance missions to verify compliance with the terms of surrender by the Japanese. In the days after they arrived six B-32.



During one of these missions, the B-32 were attacked on August 17 by flak and Japanese fighters, claiming some killing and two probable. On August 18 a formation of four Mitsubishi A6M "Zero" and three Kawanishi N1K2-J-Kai Shiden attacked four B-32 engaged in photographic reconnaissance missions over Japan; This was the last aerial combat of the war. The B-32 42-108532 "Hobo Queen II" was severely damaged, one of the photographic operators was wounded and another killed, the latest victim in combat of World War II between the allies. Its crew claimed the killing of two Zeros and probable killing of one Shiden-Kai. The last photo-reconnaissance mission was carried out on August 28; the same day, two B-32 were destroyed in two separate incidents that caused the deaths of fifteen of the twenty-six-man crew. The 386th Bomb Squadron finished operations on 30 August. Production of the B-32, which had already been ordered another 1,598 copies, was canceled on September 8, 1945, and ended on October 12. All B-32 were set aside at the Aerospace Maintenance And Regeneration

Center (AMARC) on Davis-Monthan Air Force Base in Arizona and later demolished, the last, 42-108474 initially intended to National Museum of the United States Air Force in near the Wright-Patterson Air Force base (Wright-Patterson Air Force base) in Ohio, was declared surplus and demolished at Davis-Monthan in August 1949. Like the other aircraft produced in that period, the B-32 were delivered unpainted in apart from the anti-glare panel on top of the muzzle in front of the cabin and the engine capottature the inner sides that were dark olive FS34087 to prevent reflections of the sun on metal surfaces could dazzle the crew; arrived at the department were possibly camouflaged commander's discretion.

## **Versions**

### **XB-32**

Three prototypes used for test flights during the development of the project.

### **B-32A**

Of bomber production version.

The first B-32 series (42-108471) was delivered to the USAAF September 19, 1944, with a drift similar to that of the B-29. The same day he had a landing accident to failure of the nose gear.

They were produced 74 aircraft of this version.

### **TB-32A**

Version unarmed training and avionics simplified. It was about 320 kg of ballast distributed to keep the center of gravity.

The first TB-32A was delivered on January 27, 1945. They were produced 40 aircraft of this version after the first fourteen B-32A.

## North American B-25 Mitchell

The North American B-25 Mitchell was a twin-engine medium bomber manufactured by North American and mainly used by the USAAF during the Second World War. The B 25 Mitchell North American formed together with Douglas A 20 Havoc and the Martin B 26 Marauder, the backbone of the business units of support 'USAAF during World War II. Mitchell, in particular, proved a versatile aircraft that it immediately attracted the popularity. Although he had no heavy offensive load, its armament with a piece of heavy artillery, good for both offensive and defensive purposes, it was particularly feared by German pilots, Italian and Japanese. It was the plane with which he executed his famous Jimmy Doolittle bombing raid on Tokyo to give a strong signal to Japan in the aftermath of the attack on Pearl Harbor. It was a real challenge because the planes took off from the aircraft carrier USS Hornet: was unthinkable to start with a plane of that size from a runway so short. They were built a total of about 10,000 specimens, including PBJ-1 versions for patrolling ships and F-10 for reconnaissance. Was used in all theaters of operation and was used by several countries, including Britain (which received more than 900), Australia, China, the Netherlands, and the Soviet Union. It is considered as one of the best medium bombers of the conflict. The "Mitchell" nickname is in honor of General Billy Mitchell, one of the first great advocates the use of air power for military purposes. In 1945 a B-25 crashed into the Empire State Building between the 79th and the 80th floor causing 14 casualties. The B-25 is derived from the abandoned project XB-21 dating back to the thirties: the experience gained served in the NA-40 project (the future B-25). It was built only a NA-40 and several innovations were introduced to test the efficacy, such as the adoption of the Wright R-2600 engines, which then became the standard of production, in place of the Pratt & Whitney R-1830. The prototype was destroyed in a flying accident. The result of these experiments, renamed NB-40, was submitted to the US Army Air Corps at the end of 1939 for an evaluation.



It was meant as an attack aircraft to be exported to Britain and France, as both were pressure for this type of aircraft in the early stages of the Second World War. To project the NA-40B was preferred what became the Douglas A-20 Havoc; despite this, the project was re-evaluated by the army for use as a medium bomber. The NA-40B was destroyed in an accident on 11 April 1939, but still gave excellent technicians impressions that continued development.

## History

Together with Martin B-26 Marauder, the production of the B-25 began in 1939. The basis for the first version of the B-25 was a model improved the NA-40B, called NA-62. Because of the critical need for medium bombers, no experimental versions were built, and all the changes that were necessary were made directly in the process of production or, for existing models, in special centers. The most important change was the redesign of the wing. In the first nine specimens of the series, the wing had a positive dihedral; this feature entailed a number of stability issues and so the dihedral was canceled in the outer part of the wing, forcing the B-25 a configuration with "gull wings". Also compared to the NA-40B fuselage was enlarged. After the construction of the first 24 copies, the designation was changed to B-25A in which, compared to the NA-62 project, the passive protection for the pilot and for the fuel tanks were introduced. The first on board the B-25 was the 17th Bomb Group operations group who received copies of the version A in 1941; it was from this department that were chosen the 16 aircraft that led to the end of the Tokyo raid. After a number of changes, including better engines, better visibility for the navigator, more armament in the nose and sghiaccianti equipment and anti-ice, the B-25C was delivered to the army: it was the first mass production for this aircraft. Also introduced were also controlled servo turrets dorsal and ventral to improve the defense of the most vulnerable sectors, the autopilot and underwing racks: it was also possible to carry a torpedo. The next version, the B-25D was identical except for the place of production: Inglewood (California) for the version C, Kansas City (Kansas) for D. Of these two versions were produced 3,915 copies throughout the war. Although it was designed to bomb from medium altitudes and in level flight, in the Pacific theater it was frequently used in missions at low altitude strafing against airports, bases and Japanese ships. The need for an aircraft suitable for strafing born the B-25G: instead of the transparent nose was fixed two machine guns caliber 12:50 and M4 75mm cannon, the weapon with the highest caliber used on an American bomber.



The gun 75 was reloaded manually by the sailor who had to stand in the face without windows with the smoke of gunpowder, and also had to constantly check the breech of the gun as he backed and be careful of the hot shell casings that were ejected. The projectiles weighed about 6 pounds each and they were transported up 21. The successor to the B-25G, the B-25H, possessed an even greater firepower: the M4 cannon was replaced with a weapon more modern and light and other machine guns were mounted muzzle 8 (of which 4 are fixed in special fairings in the fuselage), which were added to those defensive. This version was designed specifically to attack ships. In all they were built 1,400 B-25G and H. The last version produced, the B-25J, was a middle ground between the B-25C and B-25H: kept most hard armament of the H version but muzzle returned to being as transparent as in earlier models, although about 800 B-25J was fitted solid muzzle; improved engines were also installed. They were produced around 4,318 specimens. The Mitchell was a safe and easy airplane to fly: an engine out of order, it was possible to turn up to 60° in that direction and it was easy to keep control under 230 km / h; Furthermore the tricycle landing gear allowed excellent visibility during taxiing.



It was an incredibly rugged plane: a B-25C of the 321st Bomb Group was nicknamed "Patches" because the crew had painted all the holes caused by flak with zinc chromate; at the end of the war plane he had completed 300 missions, had landed without trolley six times and had about 400 holes in the fuselage. Its structure was so dilapidated that it was necessary to fly straight to keep the left aileron trim 8th and right rudder to 6th, however, causing an aircraft side slip into the sky. The biggest flaw of the B-25 was the high noise levels, so much so that many pilots with many hours of flight suffered some hearing loss.

A curious feature was that the B-25 could extend the operating range by lowering the flaps of a quarter; given that in the cruise phase the nose tended to rise, about 150 liters of fuel lying below the suction pump of the tank and were so unusable. The Mitchell worked on all sides of the conflict: from the Pacific, where proved a fundamental weapon, to the European one, where, starting from the Anglo-American landing in Algeria and Morocco, dropped total of about 84,980 tons of bombs and He shot down



193 enemy planes, carrying about 63,177 missions. After the end of the war and until the many remnants of war of sixty B-25J were used by smaller air forces, such as those of China's Nationalist and Communist China, Indonesia, Venezuela, Chile and Brazil. A descendant of the B-25 was the XB-28 Dragon, understood as a version for high altitudes of the B-25.



XB-2 Dragon

Despite the conditions, the development led to a small plane like Mitchell and was much more similar to the Martin B-26 Marauder. About 34 specimens are still in flying condition; many others are on display in various museums in the world. In 1942, two B-25C aircraft were converted into suitable for testing sgghiaccianti equipment and anti-ice and were renamed XB-XB-25E and 25F.

- The XB-25E (nicknamed Flamin Mamie) led into the exhaust gases of the engines in the wings to melt ice.
- The XB-25F used insulated electric coils to heat the surface of the metal.

Both were experienced for a long time in 1944 and the system used in the XB-25E proved more practical and feasible than the one used on the XB-25F. Although the results were promising, no aircraft built during World War II used this system, while today it is widespread. Many aircraft propeller USAF employees use small tubes that run along the edges of the wings in which the engine exhaust gases are conveyed, by dissolving or preventing ice formations.

## **Departments who employed the B-25**

### **United States Army Air Force**

- 12th Bomb Group (Mediterraneo e India)
- 17th Bomb Group (USA)
- 28th Bomb Group (Alaska)
- 38th Bomb Group (Pacifico)
- 41st Bomb Group (Pacifico)
- 42d Bomb Group (Pacifico)

- 310th Bomb Group (Mediterraneo)
- 321st Bomb Group (Mediterraneo)
- 340th Bomb Group (Mediterraneo)
- 341st Bomb Group (India e Cina)
- 345th Bomb Group (Pacifico)

## **Royal Air Force**

- Number 98 Squadron
- Number 180 Squadron
- Number 226 Squadron
- Number 305 Squadron
- Number 320 Squadron
- Number 342 Squadron
- Number 681 Squadron
- Number 684 Squadron



## Pratt & Whitney R-1830

The Pratt & Whitney R-1830 Twin Wasp radial aircraft engine 14 was a double star-cylinder air-cooled, produced by the American Pratt & Whitney in the period from the mid-thirties until the end of the forties. The Twin Wasp radial aircraft engine is being used in many of those products in the United States in the period of World War II.



With the arrival of the design engineer Frederick Brant Rentschler, Pratt & Whitney in 1925 laid the foundation for the creation of a unit that would satisfy the specifications of U.S. Navy request for a new radial air-cooled engine. This led to the design of the R-1830 Twin Wasp, units won that contract, becoming the standard engine aircraft of the US Navy, and the beginning of the thirties manned a large number of fighters, bombers and transport planes, both US and foreign design. Thanks also to the need to meet, in its various versions, the war effort during World War II, in the years of production ranging from 1932 to 1951 was built in well 173,618 units, making it the most produced aircraft engine in the history of aviation.

### Technical features

- Number of cylinders: Radial Engine 14 double star cylinders
- Cooling: air
- Power supply: vacuum carburettor Stromberg
- Distribution: OHV 2 valve per cylinder
- Compressor: single-stage centrifugal
- Diameter: 1,224 mm
- Capacity: 30 L
- Bore: 140 mm
- Stroke: 140 mm
- Rap. Compression: 6.7: 1
- Empty weight: 667 kg

- Power: 1,200 hp (895 kW) at 1,500 meters to 2,700 rpm - 1,050 hp (783 kW) at 2,250 meters to 2,550 rpm
- Weight-power ratio: 1.50 kW / kg
- Fuel: Petrol 91/98 Octane

## **Versions**

- R-1830-13 - 575 hp (429 kW)
- R-1830-36 – 1.200 hp (895 kW)
- R-1830-43 – 1.200 hp (895 kW)
- R-1830-49 – 1.200 hp (895 kW)
- R-1830-64 - 900 hp (671 kW)
- R-1830-65 – 1.200 hp (895 kW)
- R-1830-75 – 1.200 hp (895 kW)
- R-1830-76 – 1.200 hp (895 kW)
- R-1830-82 – 1.200 hp (895 kW)
- R-1830-86 – 1.200 hp (895 kW)
- R-1830-9 - 950 hp (708 kW)
- R-1830-90 B – 1.200 hp (895 kW)
- R-1830-90 C – 1.350 hp (990 kW)
- R-1830-92 – 1.200 hp (895 kW)
- R-1830-94 – 1.200 hp (895 kW)
- R-1830-S1B3-G – 1.000 hp (745 kW)
- R-1830-S1C3-G – 1.200 hp (895 kW)
- R-1830-S3C4-G – 1.200 hp (895 kW)
- R-1830-S4C4-G – 1.200 hp (895 kW)
- R-1830-SC3-G – 1.050 hp (783 kW)

## Wright R-2600

The Wright R-2600 Cyclone 14, also known as Twin Cyclone, was a radial aircraft engine 14 double star-cylinder air-cooled product in the thirties and forties the US by the Curtiss-Wright Corporation. The operation was dictated by the requirements to provide the range of a more powerful radial engine and which occupy the band of 1,600 hp.



The R-2600, the development of which began in 1935, it is derived from the R-1820 Cyclone 9 to 9 cylinders single star, the successful founder of the Cyclone series. Of the previous model shared a substantial number of mechanical components, such as cylinders from the same bore and stroke measures, managing to keep the same front dimensions. Introduced in 1939, the R-2600 reached the figure of 50,000 units, produced at plants in Caldwell, New Jersey, and Cincinnati, Ohio.

## Technical features

- Number of cylinders: Radial Engine 14 double star cylinders
- Cooling: air
- Power: Stromberg carburetor PR48A vacuum with automatic fuel system
- Distribution: OHV 2 valve per cylinder. Exhaust valves with a core of sodium
- Compressor: Centrifugal, single-stage and two-speed
- Length: 1,576 mm
- Diameter: 1,397 mm
- Capacity: 42.7 L
- Bore: 155.6 mm
- Stroke: 160.2 mm
- Rap. Compression: 6.9: 1
- Empty weight: 930 kg
- Power: 1,750 hp (1,305 kW) to 975 meters at 2,600 rpm - 1,450 hp (1,080 kW) at 4,575 meters to 2,600 rpm
- Weight-power ratio: 1.40 kW / kg
- Fuel: 100 octane gasoline

## Versions

- R-2600-3 – 1.600 hp (1.194 kW)
- R-2600-19 – 1.600 hp (1.194 kW)
- R-2600-8 – 1.700 hp (1.268 kW)
- R-2600-12 – 1.700 hp (1.268 kW)
- R-2600-13 – 1.700 hp (1.268 kW)
- R-2600-29 – 1.850 hp (1.380 kW)
- R-2600-20 – 1.900 hp (1.420 kW)
- R-2600-22 – 1.900 hp (1.420 kW)

## Versions

### B-25

Official version of NA-62 derived from the NA-40B version on special request dell'USAAC that needed a bomber with characteristics of autonomy of at least 3200 kilometers, top speed of 480 km / h and capable of a 1,360 kg payload. In 1939, despite the prototype had never flown, 184 were ordered on the basis of impressive design features. On 19 August 1940, the first unit of the B-25 made its first test flight piloted by Vance Breese. Moved by a pair of Wright Twin Cyclone, which in the R-2600-9 version developed 1,350 hp, it was armed with three machine guns, 7.62 mm respectively disposed in the nose, fuselage and belly plus a machine gun 12.7 mm in the queue. In spite of the similarity with the NA-40B version, the B-25 was a completely new aircraft (pilots flying side by side and now no longer in tandem). The first nine specimens, respecting the original design which provided a clear positive dihedral for the entire length of the wing, showed serious stability problems, therefore the wing was redesigned so as to eliminate the dihedral in the section between the engine and the end the wing. The NA of the engineers had to try more than five different forms for vertical rudders (in the starting version were rectangular with rounded corners) before reaching the rectangular configuration with sloping side being the only one to simultaneously ensure high performance and an excellent steering feeling . The USAAC received the first B-25 in February 1941, the B-25 were built in total, and 24 were used to patrol the coasts. The first B-25 remained at the NA, who used it as a means of transportation for 5 passengers (the WHISKEY EXPRESS) throughout the war, the aircraft went missing in the early months of 1945.

## B-25A

He flew for the first time February 25, 1941, was substantially similar to the B-25 but equipped with better armor to crew protection, self-sealing tanks, and a better location for the tail gunner.

These changes slightly reduced performance due to the increase in weight.



In honor of General Billy Mitchell pioneer and strong supporter of the air defense concept in 1920 and at the suggestion of Lee Atwood, the USAAC officially assigned to the aircraft the name "Mitchell." Were 40 specimens of B-25A built also assigned to these tasks coastguard. December 24, 1941, a B-25A was the star of the sinking of a Japanese submarine off the west coast of the USA.

## B-25B

Developed to solve the insufficiency demonstrated in arming defensive previous versions, it was equipped with two Bendix turret with two 12.7 mm machine guns, the first dorsal and rear position controlled by a gunner, the second in slightly more advanced ventral position, controlled by the gunner with a periscope. Retractable was given which generated a high resistance capable of reducing the maximum speed of 48 km / h. The location of the tail gunner had been eliminated. The additional weaponry caused a further increase in weight and a decrease in performance because the engines remained unchanged; therefore slightly it increased the wing span and wing width. In total 120 products were B-25B in 1941 to complete the entire agreement of 184 aircraft entered into with the USAAC (who had since become USAAF June 29, 1941). 23 specimens were delivered to the RAF as the Mitchell Mk I, who used them to order a Training off the Bahamas islands. Some B-25B were also supplied to the Soviet Union.



## B-25C

Improved version of the B-25B, shorter than 25 cm, mounted the new R-2600-13 engines (13 radial-cylinder 1,700 hp), autopilot, anti-ice system on the wing sections, plus tanks, slides to mount tanks or bombs, reinforced wings and heating in the cabin.



He featured a hemispherical transparent window to allow the navigator, and in later versions were equipped with two 12.7 mm machine guns in the nose side (one fixed and one mobile). This was the first version that was mass produced, 1,625 copies; was also used in the UK with the name Mitchell II, in Canada, China, the Netherlands and the Soviet Union.

## B-25D

Identical to the B-25C, the only difference was that the B-25C was produced in Inglewood, California, while the D was produced in Kansas City, Kansas. He flew for the first time on January 3, 1945. It was produced 2,290 copies.

## XB-25E

A single specimen of B-25C modified to test anti-ice equipment.

## XB-25F

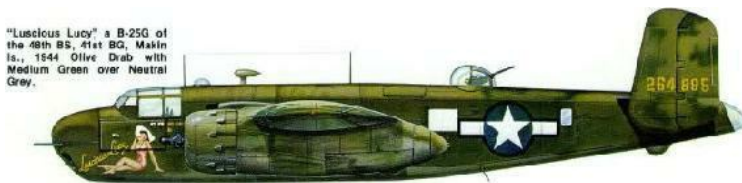
Single B-25C modified to test the use of isolated electrical coils mounted in the wings and in the drift as anti ice system. It turned out the most efficient system experienced the XB-25E.

## XB-25G

It was a modified version of the B-25C with not transparent nose equipped with two fixed machine guns 0.50 and an M4 75mm cannon.

## B-25G

It was born from the success of the prototype XB-25G also seen the great need for attack aircraft and machine-gun fire.



He is carrying more weapons and fuel than the prototype. One copy was passed to Britain that gave him the name of Mitchell II, already used to the B-25C. They were produced 420 copies. Designated by the Navy PBJ-1G.

## B-25H

The B-25H (name of the factory NA-98) differed from the previous G version primarily for greater armament. A 75 mm gun (T13E1, lightweight M4) version was installed in a tunnel in the nose place where even four fixed 12.7 mm machine guns were installed in place of the previous two, a pair of the same machine guns type was instead installed on each side of the helicopter. Completed the armament of the aircraft two machine guns placed on the sides of the aircraft, in the rear, two machine guns placed in a caudal



position and two more placed in a dorsal turret swivel.



One of the most controversial change from previous versions was the elimination of the second pilot that allowed a total savings of about 140 kg. While Gen. James Doolittle was useless the presence of a second driver, the other other officers, including George Kenney, commander of the 5th Air Force in the Pacific, objected that the presence of this crew member was essential for long flights over the sea. Eventually Gen. Arnold ignored such objections and so the second pilot was finally removed from the B-25H.

The B-25C-10 (serial number 42-32372) was the first aircraft modified as a prototype of the B-25H and for such purposes was equipped with a nose similar to the B-25G with two machine guns and a cannon M4 since the expected T13E1 was not yet available. Already in this plane the location of the second pilot was deleted and replaced by a small seat for the navigator. As expected from the project the dorsal turret was moved to the fore and was eliminated the ventral turret. The ammunition of 75 mm cannon (21 total shots) was housed in what was the original location of the navigator forcing the latter, as stated, to settle into the cockpit next to the pilot. The plane thus converted was powered by two radial engines Wright R-2600-20 air-cooled and equipped with fourteen cylinders. Two volumetric compressors were provided normal compression of 7.06 to 1 and a maximum of 10.06 to 1. The aircraft flew for the first time May 15, 1943 in the hands of the test pilots of the North American Ed Virgin and Gus Pitcairn. The prototype followed the first model of production (serial number 43-4105), now equipped the R-2600-13 engines, flew for the first time July 13, 1943 and was accepted dall'USAAF the next month.

The crew consisted of five people:

- pilot
- navigator / radio
- operator / gunner / flight engineer / gunner dorsal
- Side gunner / operator photo
- tail gunner

During production, various changes were made:

- From the series B-25H-5 (specimen s / n 43-4405) were added to the two pairs of MGs to the sides of the fuselage bringing the total number of these weapons to fourteen. It was also installed a pointing system for the cannon and an electric command for dropping the bomb.
- Always with the same number (example s / n 43-4535) the ability to carry 900 kg bombs on the planned 1,200 it was eliminated since he rarely even these aircraft then carried out bombing missions and that they took away a lot of space inside the accommodation fuselage.

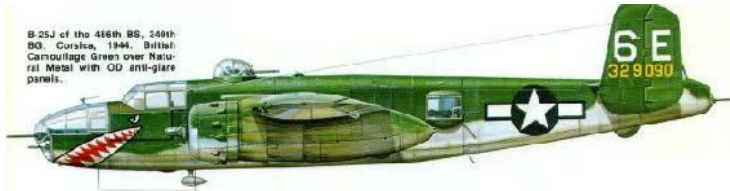
- With the series B-25H-10 (example s / n 43-4705) was redesigned pilot's panel and some changes were made to the interior fittings as well as the brake system.

The cannon T13E1 usually fired from an altitude of 300 meters (share of the attack) up to 150 meters, which marked the end of the quota attack. The pointing system was formed from N-6A device that was zeroed on the firing line to 300 meters away. During the attack the pilot opened fire from a distance of 600 meters with the possibility of firing three shots up to the plane reached the target distance of 300 meters below the which the attack was aborted since it is descended below the zero distance of the cannon. The use of the B-25H demonstrated that even this version did not offer particular advantage compared to an exclusively equipped with machine guns since at that point the war there were almost no more targets for the destruction of which it was necessary to use a cannon. Consequently already August 1944 in the Pacific (the only theater of use of these aircraft) the use of the gun was abandoned and from September all aircraft were transferred to the 38th Bombardment Group or sent to stores. This group, unlike the previous one, favorably welcomed the new plane that allowed the complete disposal of the previous B-25G of which was equipped. Twenty-four B-25H were sent to the 11th Bombardment Squadron of the 341 Squadron bomber who used them in China for interdiction duties. These aircraft were the first to be equipped in November 1944 of the new APG-13A radar telemetry allowing a continuous and easy target of remote sensing in order to facilitate the use of the gun. This equipment, operated by the navigator / gunner, was installed on 43-4584 specimens, 4071, 4924, 4989 and 4601. In China, the aircraft was also delivered to 341 ° Bombardment Group who used some of them until the end of the war. Similarly, the 1st Air Command assigned to Burma received this bomber variant. 1,000 units were produced. Designated by the Navy PBJ-1H.

## B-25J

The last produced version of the B-25 and represents a middle ground between the C version and the version H.

She had a transparent nose, although many cars were delivered modified to fit the non-transparent nose.



B25-J - Transparent nose.

Many of its 14-18 machine guns were mounted in front and were particularly suitable for missions at low altitude strafing.

4,318 copies were produced, of which 316 copies were delivered to the RAF and renamed as Mitchell III.



B-25 J - Nose "metallic" with machine guns 12.7.

Designated by the Navy PBJ-1J, with improved apparatus and other radio systems. It was often equipped with small machine guns and radar to search for ships / submarines extremity mounted wing.

## TB-25

Version used for training consists of the following models:

- TB-25D - Initially known as AT-24A (Advanced Trainer, Model 24, Version A), derived from the B-25D. They were built around 60.
- TB-25G - Initially known as AT-24B, is derived from the B-25G and were built around 60.
- TB-25C - Initially called AT-24C, is derived from the B-25C and were built around 60.
- TB-25J - Initially called AT-24D, is derived from the B-25J and 60 were built in total, while 600 B-25J were adapted after the war.
- TB-25K - Trainer for the fire control radar Hughes E-1. They were costriiti 117 specimens.
- TB-25M - Trainer for the fire control radar Hughes E-5. They were built 40

units.

## **VB-25J**

Some B-25s were converted for personal transport and VIP. Henry H. Arnold and Dwight D. Eisenhower used B-25J converted for their travels.

## **Technical features**

### **Dimensions and weights**

- Length: 15,54 meters
- Wingspan: 20.60 meters
- Height: 4.80 meters
- Wing area: 56.67 m<sup>2</sup>
- Empty weight: 8,835 kg
- Maximum takeoff weight: 15,876 kg

### **Propulsion**

- Engine: two radial Wright R-2600-29 Cyclone
- Power: 1,724 hp each

### **Performance**

- Maximum speed: 433 km / h
- Autonomy: 2173 km
- Tangent: 7,255 meters

### **Armament**

- Machine guns: 12 12.7 mm machine guns
- Bombs: Up to 1,360 kg

## Use

The majority of B-25 were used in the Pacific. They fought in Papua New Guinea, Burma and in the central Pacific. In Burma, the B-25 was often used to attack the Japanese communication links, in particular the bridges in the center of Burma. It also helped to supply the besieged troops at Imphal in 1944. In the Pacific, the B-25 has been shown to be anti-shipping weapon very capable, sinking many ships. Following the distances between the islands limited the utility of B-25, although it was used against Guam and Tinian. It was also used against the Japanese islands occupied, as has happened in the Marshall Islands.

The first B-25 arrived in Egypt just in time to take part in the battle of El Alamein. He later took part in the rest of the North African campaign and the invasion of Sicily. In Italy, the B-25 was used in the role of ground attack, focusing on attacks against road and rail links. The Royal Air Force (RAF) was the only one to use the B-25 in uoi raids from bases in the UK. The B-25 Mitchell were appointed by the RAF and were delivered in August 1941; these bombers were used exclusively for training and familiarization time and have never reached the operational status. The B-25cs and Ds were appointed Mitchell II; total, 167 B-371 and B-25Ds 25cs were delivered to the RAF. The first operation of the RAF with Mitchell II took place January 22, 1943, when six aircraft of the 180th Squadron RAF attacked oil facilities in Ghent. After the invasion of Europe, all four Mitchell squadrons were moved to bases in France and Belgium (Melsbroek) to support the allied ground forces. Wing RAF were later assigned 316 B-25Js that entered service as Mitchell III. The deliveries took place between August 1944 and August 1945. However, only about 240 of these bombers have actually reached Britain, since part was diverted to the 111th OTU in the Bahamas, while others were detained in the United States. The Royal Canadian Air Force (RCAF) was an important member of the B-25 Mitchell, although most use of 162 Mitchells was delivered after the war. The first B-25 for the RCAF had originally been diverted to Canada by the RAF. Among them, a Mitchell, 42 Mitchell 19 Mitchell IIs and IIIs. Australians instead obtained the Mitchell in the spring of 1944. On 30 June 1941 the Netherlands Purchasing Commission, acting on behalf of the Dutch exile government in London, he signed a contract with the North American Aviation for 162 aircraft B-25C. The bombers had to be delivered to the Dutch East Indies to help deter any Japanese aggression in the region.

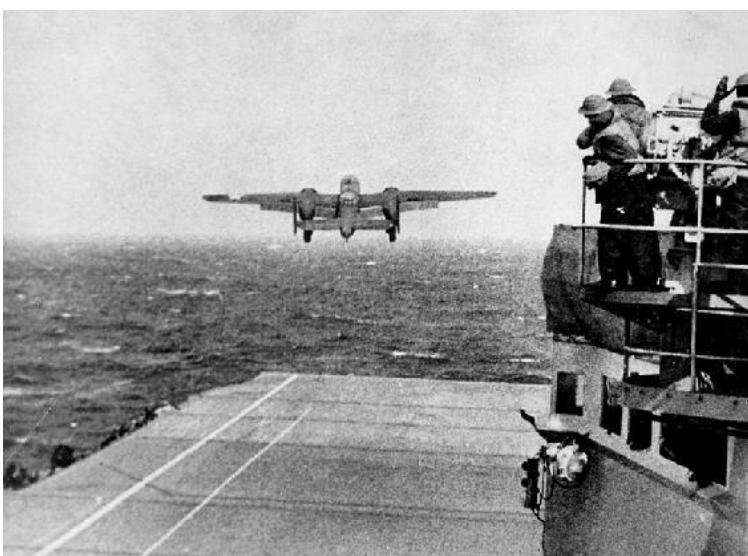


In February 1942, the British Overseas Airways Corporation (BOAC) agreed to carry 20 B-25 of the Dutch from Florida to Australia via Africa and India, and 10 more because the Pacific from California. In March, 5 Mitchell had reached Bangalore, India, and 12 had reached Archerfield in Australia. It was agreed that the B-25 in Australia would have used the nucleus of a new squadron, designated No. 18. This squadron was run jointly by Australian and Dutch crews, plus a handful of teams from other nations, and operated at least initially under control Royal Australian Air Force. In June 1940, the 320 Squadron RAF was formed by staff already in service with the Royal Dutch Naval Air Service who had fled to England after the German occupation of the Netherlands. Featuring several British aircraft, the 320 Squadron held anti-submarine patrol activities, convoy escort missions, tasks, and air-sea rescue. The 320 Squadron was in August of 1945. After the war, the B-25 were used in Indonesia. Gli US provided 862 B-25 (type B, D, G, and J) with the Soviet Union the contract "Lend-Lease" sent by Alaska-Siberia ferry ALSIB. Well over 100 B-25 Cs and Ds were supplied to the Chinese nationalists during World War II. In addition, a total of 131 B-25Js were supplied to China with the "lend-lease" contract. During the war, the Brazilian Air Force (FAB) has received a couple of B-25 always with the contract "Lend-Lease". Brazil declared war against the Axis powers in August 1942 and participated in the war against submarines in the South Atlantic.

## The Tokyo raid

The Tokyo air raid of April 18, 1942, also known as the Doolittle raid was the first air strike that the United States of America conducted on Japanese soil during World War II. This mission was very special because sixteen USAAF bombers with the size of the North American B-25 Mitchell took off the deck of the aircraft carrier USS Hornet of the United States Navy. The bombing was organized as a response to the attack on Pearl Harbor on December 7, 1941 and had more moral value than tactical or strategic: in command of American intentions, should serve to understand the Japanese that the US would fight until the end, but also to raise the morale of the people and of US troops. The raid was planned and conducted by Lieutenant Colonel Jimmy Doolittle, a famous aviator and civil aeronautical engineer before the war, also winner of an edition of the Schneider Cup. The idea, however, was the captain of the Navy Francis Low: remarked that, under certain conditions, a twin-engine bomber could successfully take off from the deck of an aircraft carrier. Subsequent calculations made by Doolittle indicated that the B-25 Mitchell could take off from an aircraft carrier with a reasonable bomb load, hit a target in Japan and landed in China. On 1 April 1942, after two months of hard training, 16 medium bombers North American B-25 Mitchell, modified for the occasion, were loaded on the Hornet in Alameda, California, along with their crews, made up of five volunteers and staff of maintenance. The planes were highly relieved of all that is not indispensable and with the viewfinder Norden (crucial to the accuracy of the bombing) replaced by a much simplified tool to prevent it from falling into the hands of the Japanese. Each plane was carrying four bombs from about 500 pounds, two machine guns 0.50 caliber in the dorsal turret, a machine gun from 0.30 in the nose and extra fuel tanks. Tail plane were also equipped with two fake machine guns, made of wood, to discourage any Japanese attacks from that direction.

The planes were loaded and placed on the flight deck of the Hornet in the same order in which they would leave. The aircraft carrier left the port of Alameda on April 2 and a few days after he reached the Pacific Ocean, the aircraft carrier USS Enterprise and her escort of cruisers and destroyers.





A B-25 takes off from the aircraft carrier USS Hornet.

The fighter aircraft of the Enterprise would provide the air cover necessary as those of the Hornet had been stowed below deck to make room for the B-25. The two aircraft carriers and escort ships then proceeded in silence radio to the point of launch within the Japanese-controlled waters. Off the Midway Islands eleven days later he joined the Hornet and the Enterprise Task Force 16 heading towards Japan. The Enterprise provided the air cover (as with the flight deck cluttered bombers from the Hornet could not take off their hunting), penetrating deep into enemy waters to allow the launch of the bombers Doolittle in a bold attack on Tokyo and other major Japanese cities. Originally the force intended to proceed up to 750 km away from the coast of Japan, however, the morning of April 18, the Japanese patrol boat No. 23 Nitto Maru, sighted the US task force. On the morning of April 18, then, at a distance of about 1,200 km from Japan, the task force was sighted by a Japanese vessel that launched a radio alarm; although the boat was quickly destroyed by a destroyer escort (the cruiser Nashville), Doolittle, and the commander of the Hornet, Captain Marc Mitscher, they decided to take off the bombers at once, with one day in advance and about 370 km more away from the intended point. All planes took off without any problems and flew in a row and at a low altitude (to avoid detection) to Japan. I reached around noon and bombed military targets in Tokyo, Yokohama, Kobe, Osaka and Nagoya; They were also hit civilian settlements.



After they flew bombing of Eastern China Sea headed to China where special support bases had been set up. During the flight to China, however, they encountered many difficulties: the sun was setting, the fuel was low and the weather conditions were rapidly deteriorating. Because of all these problems the crews realized that probably would never be able to get into the support bases, remaining in doubt whether to launch over the East China or groped a crash landing on the Chinese coast. Fifteen crews chose to launch; one instead, despite the contrary advice of Doolittle, successfully landed in Vladivostok, in Russia, where the B-25 crew members was seized and interned until

1943, when they managed to flee to Iran. Doolittle and his men, after having landed by parachute in China, received assistance from the American missionary John Birch, who was then later recommended by Doolittle to work with the secret services of General Claire Chennault. After the attack, many of the crews that rushed on China landed without problems; two crews (10 people in all), however, were captured. August 15, 1942, the United States knew from Shanghai Swiss consulate that 8 of the 10 missing men were held prisoner by the Japanese in the city's police headquarters; the other two were killed in landing. On 19 October 1942, the Japanese branched off an advertisement, no names and other details, which claimed to have tried the crews and to have them sentenced to death, but to some of them the sentence was commuted to life imprisonment. After the war, the history of the two missing members came to light during a trial for war crimes held in Shanghai: four Japanese officers had to answer charges of ill-treatment on the eight captured Americans, Hallmark, Robert J. Meder, Nielsen, Farrow, Hite, Barr, Spatz and DeShazer. The other two on board, Dieter and Fitzmaurice, had died by jumping from their B-25 off the coast of China. In addition to torture and hunger, they contracted dysentery and beriberi due to the poor conditions in which they were held. On 28 August 1942, the pilots Hallmark and Farrow and gunner Spatz had suffered from Japanese farce-a process that nobody had informed them. On October 14, they were informed that the next day would be executed: at 16:30 on October 15, loaded on a truck, were transferred to the public cemetery and subjected to shooting.

The other five were in the military prison and their health deteriorated rapidly for malnutrition. In April 1943 they were transferred to NAKing, where on December 1, Meder died for their abuse. The remaining four began to get a slightly better deal: he was also handed them a copy of the Bible and a few other books. Were liberated by American troops in August of 1945. The four Japanese officers on trial were judged guilty, three were sentenced to five years' hard labor, while the fourth to 9 years. Another Raiders (as they were later called the participants of the raid) was killed during the parachute jump on China. Immediately after the raid, Doolittle confessed to his crew feared to have lost all 16 of the planes, that the damage inflicted was minimal, that the raid had been a failure and that he expected a court martial when he returned to the United States. The success of this action instead lifted so much the American morality that Doolittle was awarded the Medal of Honor by President Roosevelt and had a double promotion to the rank of brigadier general, skipping the rank of colonel. They were assigned the command of the 12th Air Force in North Africa, the 15th Air Force in the Mediterranean and the 8th Air Force in England over the next three years. In addition to the Medal of Honor of Doolittle, the engineer-gunner Corporal Dave Thatcher received the Silver Star; all others were awarded the Distinguished Flying Cross and those who were injured or killed received the Purple Heart. Moreover, all the raiders received a decoration by the Chinese government. Compared to the devastating bombings carried out by B-29 Superfortress few years later, the Doolittle raid caused little material damage. Despite this, the press emphasized much the operation and when the news of the supposed success was given to the Americans their morale is lifted, considering the discomfort caused by the attack on Pearl Harbor and the subsequent

Japanese advance in the Pacific. The raid also had a minimum strategic impact: forced the Japanese to draw from front of some fighters to defend the motherland decreasing their aerial capabilities against the Allies in general in the Pacific theater.

## Silver Star

The Silver Star, called Silver Star Medal by the Navy and the US Marine Corps and literally translated as "silver star" in Italian, and is the third highest decoration for bravery that can be given to a person by the US armed forces for an act of heroism in action against an enemy of the United States of America. It is preceded by the Medal of Honor and the "cross" of the armed forces, three medals in the shape of a cross (Distinguished Service Cross, Air Force Cross, Navy Cross) of equal rank, specific for each service branch of decorated: one for the Army, one for the Air Force and a third shared by Navy, Marines and Coast Guard.



It can be compared to the award criteria, the bronze medal at the Italian military valor. The Silver Star is awarded for acts of valor that do not justify higher order decorations, specifically the three "cross", Distinguished Service Cross, Air Force Cross and Navy Cross. The heroism must have taken place during an action against an enemy of the US, during a military operation against a foreign power or during operations conducted by a friendly power against an entity not officially in conflict with the US.

In the past, the Silver Star was awarded to the fighter pilots of the Air Force and naval aviation when they became aces, scoring five knockdowns recognized. In the non-seater aircraft, the decoration was usually extended to the officers and employees of the weapons to the radar if they could prove that he intentionally risked his life several times in extreme combat conditions, and emerge victorious. However, during the Vietnam War - the last conflict in which there have been US axis - the five aviators who reached this status were awarded both the Silver Star is the Air Force Cross (for members of the USAF) or Navy cross (for the naval Aviation). The Silver Star is presented as a five-pointed star of 38 mm in diameter, with a central crown of laurels that encloses a 4.8 mm silver star.

On the flip side, the inscription "FOR ACTION IN gallantry" for heroism in action.

The ribbon is 35 mm long and, symmetrically from the center towards the ends, it consists of: central red band, 5.6 mm, 5.6 mm white stripe, stripe ultramarine blue, 5.6 mm, white stripe 1, 2 mm and finally band ultramarine blue 2.4 mm. For the second and further transfers, they affix the ribbon oak leaves (oak leaf clusters) for members of the

Army and Air Force or stelletta for those of Navy, Marines and Coast Guard.

## Distinguished Flying Cross

The Distinguished Flying Cross (DFC) is an American award, reserved for all members of the United States Armed Forces who have distinguished themselves in an operation for heroism or extraordinary results while participating in an aerial flight, after 11 November 1918.



Was established by the United States Congress on July 2, 1926. The first to receive the medal was Charles Lindbergh in 1927.

## Purple Heart

The Purple Heart is a United States military decoration awarded in the name of the President to those who have been injured or killed while serving in the armed forces as of April 5, 1917, the day that marked the entrance of the US into World War II.



The National Purple Heart Hall of Honor, the register of military personnel who received the Purple Heart, is located in Newburgh in upstate New York. The Purple Heart is the oldest award still in use in the US armed forces, and its antiquity is second only to that of the Fidelity Medallion.

## **Victor Tatelman: a B-25 pilot in the Pacific**

As soon he slipped above the tree line, and lined the viewfinder of eight 50 caliber muzzle of his North American B-25C Mitchell with the runway at Wewak, New Guinea, the LT. Vic Tatelman was surprised to see five to six bombers Mitsubishi G4M "Betty", dive bombers Yokosuka D4Y "Judy" and Mitsubishi A6M "Zeke" lined up wingtip to wingtip along the asphalt. That rare opportunity! The only thing that remained to be done was align with the target and pull the trigger, do not burst after burst. There was the time to check the results, or to heal the AAA. He just had to keep shooting! his co-pilot, LT. Willie Graham dropped the bombs parafag at intervals, while the bomber Dirty Dora, passing over those "sitting ducks" completed a kind of double attack that left the chaos on the ground behind them.

The Japanese were surprised to Wewak ground October 16, 1943, paying dearly for the decision not to release to the track newly arrived aircraft. The final score was 82 enemy aircraft destroyed, losses that allowed the Americans to conclude with success a raid on Rabaul two days later. All members of the 499th Squadron "Bats Outa Hell" (hell bats) and the 345th Group "Air Apaches" returned to the base that day, in Port Moresby, New Guinea, where the land specialists found in their planes a lot of holes to patch, due to the damage of the AAA. Not many have heard of Victor Tatelman, who was decorated with several Air Medals, two DFC (Distinguished Flying Crosses) and a Purple Heart in almost 120 combat missions driving a B-25 Mitchell bomber. Tatelman became pilot of the Army Air Force in June 1942, along with his companions of 42F during the West Coast Training Command, in Stockton, California. What neo lieutenant, he and many of his comrades were sent to Williams Field, Chandler, Arizona, to learn to fly the cadets on Beechcraft AT-11 bombers. In each flight carrying five cadets, each of which had to do practice bombs release of target. After six months he was bored by the job, and he applied to be assigned in the area of operations, totally oblivious of the fact that this request would reset his career until then matured. In November 1942 he was transferred to Tatelman Columbia Army Air Field in Columbia, S.C., where he was organizing a new Bomber Group. There the pilots were assigned to the 498th, 499th, 500th and 501st squadron, who were to form the new 345th Bomb Group. The 345th Group, assigning pilots to different squadron was a simple procedure: the pilots were called into a large room with four large tables, and they were asked to divide evenly on 4 tables. The table chosen by Tatelman became the 499th Squadron. In the first two months to Columbia riders focused on familiarizing with Mitchell bomber, as well as in practice with the bombers and boaters. Then the group was transferred to Walterboro, S.C, where the emphasis was placed on formation flying and on bombing operations at altitude between 8,000 and 10,000 feet. After that they moved to the air base of Hunter, in Savannah, GA, where they received their new planes and were then sent overseas. Many years later Tatelman recalled that the departure from Savannah, in the excitement of heading to the West Coast on the way into the fight, he forgot to take out the 10 degrees of flaps that all B-25 require mandatory for takeoff. As soon he began to taxi on the runway he remembered. A quick movement of the hand on the flap, and they were in flight, headed



to Mather Field, Sacramento, California. Here the latest changes to the B-25 were made. After the additional tanks were installed in the bomb bay to San Francisco's Hamilton Field, the 499th departed for Hickam Field, Oahu. Tatelman recalls that left Hamilton with the fuel which gave him an autonomy of 12 hours and 45 minutes, and that the transfer flight lasted 12 hours and 15 minutes until arrival at Hickham. Of the 16 crews of the 499th took off, only 14 reached Hickham. The Squadron had already lost an eighth of its strength, and the survivors were only half-way with respect to the operations area. The 499th was the second group of bombers B-25ad cross the Pacific and the Army Air Force still he had much to learn. After Oahu, the next stops were Christmas Island, followed by Samoa, Fiji, New Caledonia, Brisbane, Australia, and finally a track at Reed River, near Townsville, Queensland, Australia. At the end of the journey of the 345th Bomb Group to the Pacific it lasted two weeks. A Red River they waited for their land specialists, who traveled by ship, arrived in Port Moresby, New Guinea. So they moved to Port Moresby, put into operation on the field, and prepared to fight. They landed at Buna, on the north coast of New Guinea, in the autumn of 1942. The 354th, was now part of the Fifth Air Force Gen. George Kennedy. Their base in Port Moresby was in an ideal location, only 100 miles from Buna, through the mountain range that divided the New Guinea. Troops in Buna, mostly Australian infantry, had the task of pushing the Japanese out of Salamaua and occupy Lae. Since it was not available a beach to constitute a point of supply, the troops had to be supplied from the air, and the 354th had this assignment. It was not long, and the 345th became known, the entire 5th Bomber Command as "Biscuit Bombers." As soon as the ground troops began the advance, the B-25 again began to throw bombs instead of biscuits, with Salamaua, Lae and Finchhaven as primary target. At that point, a creative guy named Paul I. Gunn actually changed the way in which Tatelman and the other drivers were operating in the Pacific. Gunn, known to many as "Pappy", had run an airline in the Philippines, and his work was interrupted when the Japanese occupied the islands. He then offered his services to General Douglas MacArthur, and General Kennedy appointed him responsible for the maintenance of aircraft of all the Fifth Air Force. Gunn developing many good ideas, first of all to reconfigure the B-25 as a low-altitude bombers. He believed that they would be much more effective in the support to the ground if they had operated at the level of the trees, and persuaded Kennedy and MacArthur to try. After six weeks of bombing operations at medium altitudes, the B-25 were modified according to Gunn's suggestions. The bomber muzzle was removed and replaced with an armed 8 .050 caliber fixed machine guns, commanded by the pilot.

A bomb-release mechanism was also installed. The 499th Squadron, now known as "Bats Outa Hell," undertook with enthusiasm the new role of low-flying bombers, and Tatelman, as well as the other crews, they learned to make good use of the new weapons. The plane Tatelman, a B- 25-C Serial No.41-12971, had already been baptized Dirty Dora when he began to use it the first few times on missions. The plane had been transferred from the 38th Bomb Grouped and had been received by the 499th Squadron in mid 1943. Due to a fluke, Tatelman learned as Dora had her name. It was the custom of the Fifth Air Force that each team had a week's leave in Sydney, Australia, every six weeks. At that time Sidney had been emptied by the young, sent to fight in

North Africa, in the countryside of the British Field Marshal Bernard Montgomery against the German Field Marshal Erwin Rommel and his Afrika Korps. As a consequence, they were popular among women in Australia on leave aviators. During a license to Sidney, Tatelman met the 38th Bomb Group pilot who had baptized the plane originally. He explained that that Mitchell had taken the name of a young woman who had accompanied him during a week's leave to Sidney. It seems that the real Dora had a very sensual temperament, and, at times, would begin to cry out the worst obscenities. Hence the name "Dirty Dora" ( "Dora vulgar"). In October 1943, Dobodura, on the north side of New Guinea, had been occupied by the forces of MacArthur, and was reinforced by powerful defenses. Now Rabaul, in the north of New Britain, was within range of the B-25 of the Fifth Air Force. Rabaul was the major point of Japanese strength in the South Pacific, for thence their air forces threatened American forces in the Solomon Islands, New Guinea, and in the sea. During the previous year, Rabaul had been bombed more or less regularly from Boeing B-17 Flying Fortress of the 19th Bomb Group and the Martin B-26 Marauder of the 22nd Bomb Group. The mission had never been conducted for more than a dozen aircraft, and the damage caused to the enemy were rarely severe. The signaled reconnaissance missions regularly more than 100 Japanese aircraft ready for combat in the area of Rabaul. The mission of 18 October 1943 was designed to destroy enemy air forces at Rabaul. The plan was to send two groups of Consolidated B-24 Liberators with fighter escort to simulate an attack on the town of Rabaul, to induce the Japanese fighter to take off to intercept them. The B-24 would arrive and they would have bombed everything except the two airports in the area. So, when Japanese planes had been filling in on the slopes, two groups of B-25 would arrive at the tree level and would have bombed them, attacking even any Japanese bomber caught on the ground. On October 17, the 345th Air Apaches moved to Dobodura, where their aircraft were prepared for a sally at dawn the following day. The 36 of the 345th aircraft, met over Buna with 18 B-25 of the 38th Bomb Group and three fighter squadron Lockheed P-38 Lightning, then made the move to Kabanga Bay, the start point of attack. To the progress of the mission the worse time. The front of the clouds in front of them appeared to compact up to 12,000 feet. The Lieutenant Colonel Clinton U. True, the mission leader, came into the blanket cover. All aircraft tightened training, so as not to lose sight. True lowered the fee to go below the clouds, and when the command sent orders to go back, he did not receive, or maybe ignored him completely. When I emerged bombers under the clouds, no one seemed to be lost, but the bomber pilots discovered that their air cover had reversed course because of weather conditions. Colonel True continued. As soon as they arrived on the coast, the 38th Group of the planes made their way to their targets, and four of the 345th squadron began in attack position, the 499th and 500th arrears, while the 498th and 501st proceeded first. Tatelman he direse to the west side of the Ropopo track, opening fire on the target as soon as it appeared in sight. The reaction of the flak was heavy but inaccurate. The smoke from the targets hit by the 498th and 501st after their first passage obscured the target area, but at the same time provided a Tatelman protection from anti-aircraft fire. As soon as the drivers of the Tatelman group left the track behind and crossed the beach, they saw what looked like a ferry boat in the bay, and they all attacked him. So the B-25

of the 345th were intercepted by a swarm of Zeke Imperial Navy launched from aircraft carriers. Fortunately for pilots and crews of the 499th, the most advanced squadron drew most of the enemy fire. But the 499th was not yet out of the woods. The Mitchells were attacked by 15 Zekes, three of which were shot down by gunners of B-25 board. Surprisingly all nine planes of the 499th returned to unaffected Dobodura. Allied forces in New Guinea alternately pushed back the Japanese, or cut them off preventing them from being refilled. In early May 1944, the Allied troops were ready to take on Yalau Plantation, south of Madang, on the north coast. Yalau was the only useful to the beach to make a landing, but it was dominated by the village of Dumun, a Japanese stronghold. It was important to be able to draw a veil smoke between the village and the beach just before the start of the landing. Tatelman, promoted to Captain, and its fifty-first mission, led the flight intended to drop white phosphorous bombs on Dumun to ensure the smoke screen. Taking off before dawn, he led his flight in instrument flight within a disruption for over an hour, emerging in an area of good weather right across from the beach Yalau. Since it was early than five minutes, he decided to strike under the bar low clouds to the southeast, and to attack the village. He thought he could do it safely veering to the north, away from the mountains, then back on target. He managed to distract the Japanese troops in Dumun with his strafing passes until 07:25, when *"He placed his bombs with great accuracy on the village, and was able to totally obliterate any enemy's vision on the landing zone Yalau about two miles. His bombs set fire to the village, which was totally destroyed. The enemy later admitted that the losses due to strafing attack and later were enormous. The rest of the enemy forces fled the area"*.

At the end of Tatelman mission he had concluded its combat turn. Because of his engineering degree, he was chosen for a special mission. He was given a 45-caliber gun and a briefcase he was secured to the wrist with a chain, and he became a courier. He was told to show up at a certain office at the Pentagon from there to a week. As he did, he found himself involved in a challenging training program lasting three months on the radar and countermeasure in places like Wright Field, Massachusetts Institute of Technology, IBM and installations in Boca Raton and Orlando, FLA. A major concern of the Americans was to know if the radar Würzburg, developed in Germany as a system to support the anti-aircraft artillery, was also sold to the Japanese. Increased accuracy of flak Japanese would be a nasty surprise in the Pacific theater, and the American authorities wanted to take corrective action. Tatelman was instructed chaff, rope, window and all the electronic countermeasures used for the jamming of enemy equipment that might be needed in some situations. On his return to peaceful, Tatelman became a member of Section 22 (Intelligence) of the MacArthur Command, stationed in the Philippines. His job was to keep the briefings to pilots of heavy bombers, and instruct the crews on counter-measures to be used against anti-aircraft installations supported by radar targeting systems. The captain soon realized that the crews were not at all concerned about the AAA fire accuracy. What worried them was the fact that the Japanese always seemed to know where they came. It seemed to be impossible to take the enemy by surprise. It appeared that the Japanese had developed an advanced radar tracking of enemy formations. Remembering that Bell had shown an apparatus to head on a radar emissions, the captain Tatelman proposed to his bosses to require that

equipment, to go find the Japanese radar, and destroy them. His proposal was approved and made Tatelman install the device on a B-25, equipped to install the indicator in the cockpit, adjusted for a single pilot. Within two weeks, the new equipment was installed on the plane to Biak, along with two new engines, a snout with eight machine guns, racks for rockets under the wings, and a new name: Dirty Dora II. Civilian experts who had worked with Tatelman to install the set apart on Dirty Dora II They carried some flights on the B-25 to calibrate and verify that it is working properly. They became so interested in the project volunteered to fly in combat missions as a technical board, and then continued to fly with Tatelman nele operational missions. From a practical point of view, Tateman made sure to get himself assigned temporarily, along with his crew and Dirty Dora II to 499th Bats Outa Hell regarding the existence, the base of operations and maintenance of the aircraft, the things to which he would not had access as a member of Section 22 Mac Arthur. The objectives were assigned by Bomber Command, usually in areas where the crews of the B-25 had had suspicions that the Japanese were waiting for them, and then they suspected that they had available an advanced sighting system. Tatelman would fly in the affected area in search of radar signals. If he found one, he would follow the issue up to the spring, where he attacked the radar station with bombs, rockets and on-board cannons.

During the 20 missions that Tatelman accomplished starting from the base of Clark Field, he and his crew destroyed eight radar, and even brought home the photographic evidence of their attacks. Tatelman earned the second DFC for having conceived, proposed and completed the destruction of radar missions, and a Porle Heart for a wound in the leg shown during the overflight of an island occupied by the enemy north of Luzon. In early 1945 the Allies had gained total air superiority in the Pacific and the 499th had begun to bomb the Japanese territory. Tatelman requested and received permission to be transferred back to the 499th and remained in service for the rest of the war as a flight leader. After the cease-played, scoring 119 combat missions drone of August 15, 1945. Clearly was not only an aggressive driver, but also a lucky pilot. After the ceasefire the Japanese were required to send the emperor sent at the command of General MacArthur in Manila to agree on terms of surrender, which was to be signed on board the Missouri in Tokyo Bay 2 September 1945. They flew to Manila aboard two unarmed bombers Betty, painted white, with green crosses painted on the wings and tail. Above the head Sata Misaki (the southern tip of Kyushu) met with two B-25 bombers, which escorted them to Ie-Shima, where they landed at American base; They were then transferred to two Douglas C54, which led them in flight to Manila. Here ncontrarono staff Mac Arthur, and discussed the terms of surrender. The kind of B-25 was provided by the 345th Bomb Group, and were piloted by Major Major Jack McClure of the 498th Squadron and the Maggioer Wendell D. Decker of the 499th Squadron, a special honor for the pilots of the B-25. The meeting with Betty on August 19 and the spare flight up to Ie Shima was without incident. In a greased some negotiations had a setback, because Americans asked the Japanese to leave their swords outside the meeting room. The matter was resolved when they agreed on the fact that all participants leave their hats and their weapons out of the hall, and negotiations could then resume expeditiously. The next day, when the envoys returned to Ie Shima, it was discovered that one of Betty was

not able to fly. The other Japanese bomber, carrying half of the post, he was escorted back to Japan, while the others had to wait until it sent the bomber was repaired. The second Japanese plane was escorted back to Japan the next day by Victor Tatelman. In fact the first Betty ended fuel and was forced to an emergency landing ahead of the jeep, not far from Tokyo. Fortunately no one was hurt. The second Betty arrived at their destination without damage the next day. Tatelman was transferred to the Air Force Reserve Reserve in 1947, so he could complete his studies as an aeronautical engineer. He received his degree in right time to be recalled to active duty in 1951. During the Korean War he flew with the Lockheed F-80 Shooting Star and the North American F-86 Sabre, in air support to ground operations departments. After the war he decided to pursue a career in the Air Force.

After a distinguished career, Tatelman retired as a lieutenant colonel, having served in the Pentagon and in many other positions.

(Richard R. Bender)

## Martin B-26 Marauder

The Martin B-26 Marauder was an American twin-engine bomber of World War II produced by the Glenn L. Martin Company. It was the first medium bomber used by the United States in the Pacific War at the beginning of 1942. He worked also on the Mediterranean and on the front in Western Europe. Immediately after its entry into service he earned the nickname of "Factory of widows" because of the high rate of accidents, especially on take off and landing.



The Marauder had to be driven carefully respecting the speed limit set by the AFM, especially in the approach to the runway and when an engine was out of order. The high speed to maintain immediately before landing (150 mph - 241 km / h) intimidate the pilots, accustomed to much lower speeds, but if instinctively slowed down, the plane immediately stallava and crashed to the ground. The Marauder became a safer aircraft when the crews were better trained in its use and after aerodynamic changes, such as increasing the wing surface and the angle of incidence of the wing, for better performance in take-off, and tail surfaces more wide.

The Marauder underwent constant changes during his lifetime: the most obvious changes, the adoption of the new Pratt & Whitney R-2800 engines. The plane was thus able to leave behind its bad reputation early to become, at the end of the War, the American bomber with the lowest percentage of losses. In 1962, when he changed the designation of the US system, the B-26 was assigned to the theme song Douglas Invader. The Marauder was produced by Glenn Martin at plants in Baltimore on draft Peyton M. Magruder. Series production began in February 1941 and ended in April 1945. They were built 5,157 units. The last B-26 left built the factories of Glenn Martin in April 1945. It bore the serial number 44-68254, and was given the name of TAIL END CHARLIE - "30". It was intended all'Armée de French air and was delivered to the GMB Gascogne 1 January 1946.



## History

In the late thirties the average US aviation bombers were obsolete hardware (the Martin B-10 and the Douglas B-18 Bolo) and it was evident that it would be necessary to renew the composition of the departments with more modern aircraft. In early January of 1939 the USAAC issued the request for a new medium-sized aircraft bombing for which were provided for high performance, especially with regard to speed. The Glenn L. Martin Co. (now Lockheed Martin) in less than six months he was able to present their project (Model 179) that, because of concerns involving the United States in the difficult international situation, was approved on paper and immediately he gave rise to the first contract of 1,100 aircraft.



The Model 179 was sent to the Army Board on 5 July 1939, and won with an order for 201 aircraft at a cost of 15,815,000 dollars. And the rival NA-62, then B-25, had an order for 184 planes and 11.771 million dollars; the cost of one Z.1007 at the time was equivalent to about \$ 72,000 a piece, thus almost half of the two American models. The B-26 was a modern aircraft, but the problem was the demand for high speeds that could not be met without serious compromises, including a small forward and loaded, and a fuselage with oval section from the cost and complexity not indifferent; in any case, the prototype flew already on November 25, 1940. The plane was produced in series but the weight increases were not negligible: after all from 4 weapons from 7.7 to 12 ran 12.7 mm between offensive and defensive. The internal armament of 1,816 kg and externally was no way to even use a torpedo from 908 kg. The aircraft was built in light alloy Alclad 24ST and mostly was assembled with weldings. The fuselage was in three sections, which contained a total of 5 compartments, the trolley was tricycle (119 cm diameter wheels), there was also a 12.7-mm machine gun fixed on the front, in the offensive function with 200 strokes.

In tanks inside the wing there were 3,032 liters.

The engines were powerful R-2800 for twin Curtiss Electric propellers. Numerous



versions starting from the B-26 base, which had a speed of 507 km / h, although the prototype had reached 531. The load of 1,361 kg was associated with a range of 2900 km and tangency of 8,000 meters. The machines were better performing and bright, but also had a short life and used as a training means and preparation for war machines true, as the B-26A with self-sealing tanks and 252 kg of armor; The B-26B with 1,883 specimens, 15,422 kg maximum weight 12,855 instead of the first series B-26, additional weapons firing in the nose (6 in all) with a total of 4,250 shots. But the speed was decreased to 454 km / h despite slightly more powerful engines of the original ones. They followed 1,235 B-26C by 17,328 kg and 300 B-26F very similar; but many were the AT-23A trainers (208) and AT-23B (1350) used for training and towing targets. To mitigate the fame difficult to plane, it must make the observation that the Marauder proved an extremely valuable creature and, in some ways, safer than many other contemporary aircraft. Among the legendary enterprises reached up to our times, it counts the history of the B-26B of the 9th Air Force baptized Flak Bait (Bait Contraerea); used from 16 August 1943 until the end of the conflict in European skies, it was the first among the Allied bombers to reach the threshold of 200 bombing operations.

On its wings and fuselage were applied over 300 "patches" to cover, it is said, more than 1,000 anti-aircraft bullet holes and various splinters.



The Martin B-26 was a high-wing twin-engine, characterized by circular-section fuselage and aerodynamic carefully looking for the maximum performance in speed; the truck was kind of tricycle. The main feature, and also the less common, resided in the high wing load ratio which at the time was by far the highest ever recorded by a (military aircraft more than 50 pounds per square foot).

From this peculiarity derived, logically, high take-off speed and landing that were the main reasons for the lengthy periods needed for training as well as the causes of different accidents. Of course, all contributed to give a bad name to the aircraft, unloved by the crews, he was seen conferring names not exactly affectionate: from "widow maker" to "flying whore", to the distortion of the name that became "Martin Murderer" (Omicid). The number of accidents occurring during training led the establishment of a

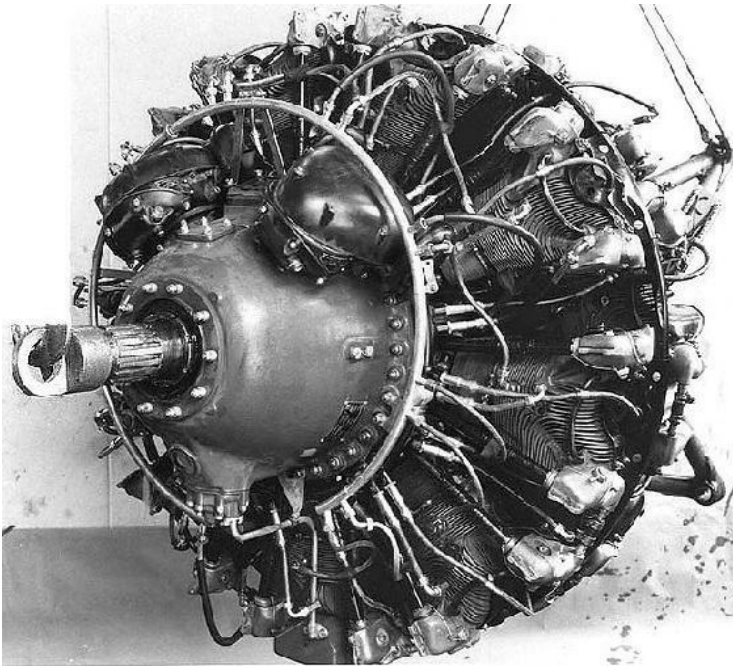
special evaluation committee and the temporary suspension of production programs; the results of audits conducted led to the expansion of the size of the wings and the tail sections (from the "B" version). In practice, however, the reduction of wing loading that would have to be derived from the increase in product weight was cleared by the armament installed strengthened.

Innovative was also the cart: removed the rear wheel, was equipped with a front wheel that fell under the nose, while the main wheels fell into the engine nacelles. The landing occurred quite abruptly but the soundness and stability of the truck tricycles combined efficiency of disc brakes, facilitated the task of the pilots. In case of abatement, the only way of escape for the occupants of the aircraft front, consisted of a trapdoor placed under the seat of the copilot and that led into the front wheel of the truck tricycles. So, before the abandonment of the plane the pilot had to necessarily activate the control for the outflow of this wheel.

## Engine

The Marauder had as single motorisation, produced in various versions, the one constituted by a pair of Pratt & Whitney R-2800 Double Wasp.

The engine, a radial 18-cylinder engine capacity of 45,950 cm<sup>3</sup> (corresponding to 2,804 in<sup>3</sup>, hence the definition of the numerical code), delivered an output of around 2,000 hp (1,491 kW), which remained virtually the same for all versions used on the B-26.



The Pratt & Whitney R-2800 Double Wasp was an aeronautical-type radial 18 double star-cylinder engine that was part of the great family of Wasp engines produced by US company Pratt & Whitney. In the mid-thirties the US company retained to develop a new engine to be placed on the end of the 2,000 hp based on the experience of the Wasp series produced until that time. Similarly to what was done for other models, the simplest technique solution was to resort to the doubling of rows of cylinders on two stars and the project also followed this trend. The R-2800, the title of which was due as per the conventions United States Army Air Forces (USAAF) from its displacement expressed in cubic inches, had a dual-star configuration, with 9 of cylinders on two offset file, first engine aeronautical US to adopt this solution, and air-cooled. The 18-cylinder, with external finning, had a bore and stroke of 146 x 152.4 mm (5.75 x 6 in) for a total effective capacity of 45,950 cm<sup>3</sup> (2,804 in<sup>3</sup>). The prototype was completed in 1937 and after the ground experiments flew for the first time in 1939. The engine R-2800 Pratt & Whitney is considered one of the best ever made radial engines. It was used on the most powerful American fighter of World War II such as the P-47 Thunderbolt of the Republic Aviation Corporation and Vought F4U Corsair naval fighter the Vought-Sikorsky, F6F Hellcat, and F8F-1 Bearcat Grumman. It was also mounted on twin-engine bombers B-26 Marauder Martin Company and the Douglas A-26 Invader. During the war the engine was subjected to a continuous process of development by the

industry to try to improve its already impressive performance. The most important change was the adoption of the water injection system that allowed to increase, for a short period, the power supplied by the motor up to 3,400 hp (2,535 kW). The possibility to use this emergency power proved very useful during air combat. After the end of the conflict the engine continued to be used on some aircraft used during the Korean War and, on the disposal of surplus aircraft from the United States Air Force in different countries, enjoyed a worldwide spread. Even in Italy it was used on the P-47 who were under the Air Force. the Double Wasp Even today, 50 years after its production, is still operational and is used on the aircraft of the time that can be seen during performances in the various World Air Show.

## Versions

- R-2800-9: 2.000 hp (1.491 kW)
- R-2800-10: 2.026 hp (1.510 kW)
- R-2800-10W: 2.228 hp (1.640 kW)
- R-2800-18W: 2.482 hp (1.827 kW)
- R-2800-27: 2.026 hp (1.510 kW)
- R-2800-31: 2.023 hp (1.508 kW)
- R-2800-34W: 2.100 hp (1.566 kW)
- R-2800-43: 2.026 hp (1.510 kW)
- R-2800-48: 2.330 hp (1.715 kW)
- R-2800-54: 2.100 hp (1.566 kW)
- R-2800-59: 2.568 hp (1.890 kW)
- R-2800-65: 2.026 hp (1.510 kW)
- R-2800-71: 2.026 hp (1.510 kW)
- R-2800-83W: 2.330 hp (1.715 kW)

## Description

- Number of cylinders: Radial Engine 18 double star cylinders
- Cooling: air
- Power: Stromberg carburetor
- Distribution: OHV 2 valve per cylinder.
- Compressor: Centrifugal, single-stage, single-speed
- Bore: 146 mm
- Stroke: 152.4 mm
- Empty weight: 1,073 kg
- Power: 2,100 hp
- Weight-power ratio: 1.46 kW / kg
- Fuel: 100/130 octane aviation gasoline

- 

## **Technical features**

### **Dimensions and weights**

- Length: 17.75 meters
- Wingspan: 19.81 meters
- Height: 6.05 meters
- Empty weight: 10,890 kg
- Maximum takeoff weight: 16,783 kg
- Units built: 5,157

### **Crew**

7 men:

- The pilot and co-pilot sat side by side at an armored bulkhead.
- The navigator, who was also the radio operator, was working from a small compartment behind the pilots.
- The bomber was sitting inside the plexiglass nose cone and, when he prepared to bomb, was operating a machine gun caliber 12.7 mm.
- Three gunners were stationed in the rear of the bomber.

### **Propulsion**

- Engine: 2 Pratt & Whitney R-2800
- Power: 2,000 hp each

### **Performance**

- Maximum speed: 510 km / h
- Cruising speed: 348 km / h
- Autonomy: 1850 km
- Tangent: 7,200 meters

### **Armament**

The defensive armament of the first version was made up of seven machine guns Browning M2 7.62 mm, that with the progress of the versions became 11, all increased the caliber of 12.7 mm, distributed as follows:

- Four fixed machine guns Browning of 0.50 inches (12.7 mm) in the snout
- A machine gun Browning pivoting from 0.50 inches in the front cabin
- Two Browning machine guns moveable from 0.50 inches in the dorsal turret
- Two Browning machine guns moveable from 0.50 inches in the rear turret
- Two 0.50-inch moveable machine guns, one for each side in the belly of the fuselage

The offensive armament, stowed in a compartment inside the fuselage, was initially composed of a maximum 3,000 pounds of explosives (equal to 1,360 kg) which increased to 4,000 pounds (1,815 kg) for the variants F and G. The version A it was adapted to the transport of a torpedo, externally to the fuselage; It does not appear that this adaptation has been replicated in later versions.

## Use

After struggling initially, the Marauder saw service in all theaters of operation of the second conflict. In the Pacific, the B-26 saw the beginning of his experience of torpedo, for which, however, can not be counted notable successes. Since the last months of 1942, the Marauder made its appearance in the Mediterranean theater of operations where the copies of the USAAC were joined those delivered to the RAF and the Royal South African Air Force. The last delivery took place on March 30, 1945. It could carry two tons of bombs placed in a compartment in the middle of the plane. The bombs were attached to a support "V" the base of which rested on a girder which also allowed the passage to men to move from the central cabin to the rear seats of combat. The bomb bay was closed by two huge doors that opened, folding under the pressure of two large hydraulic jacks. The opening and closing was commanded by bomber who was also handling the Norden viewer. The bomb load could be constituted by two one-ton bombs, four bombs from 500 kg, 250 or forty eight 50 kg. They could also be used anti-personnel bombs. These calls bombs "frag" (fragmentation bombs), hung in armor and formed a kind of cluster (cluster). They could be loaded up to 30 bunches from 6 frag each. The armor was dropped along with bombs and began the descent, the bombs were separated by armor and continued on their way. With this type of bombs, the bombardment could only be made with the planes arranged in formation in duck flight, to avoid that the planes at a lower level were affected by the supports which evidently, not offering the same resistance of the bombs to the wind, down in a manner different from these. The normal bombs were provided two strikers, one ogive and one in the rear. To the latter it was connected to a small turbine which blocked the operation. In turn, the operation of this small helix was restricted by a safety split pin and by a steel wire fixed on the launches bombs. In-flight gunner gunner passed in bomb bay and removed all the pins. At launch the steel wire, remaining attached to the aircraft structure freed small turbines that during the fall of the bombs were put to spin and freed by loosening the striker. The bombs were so, armed and ready to explode.





In an emergency, the bombs could be dropped inert. If you put the stepping switch to "save" the bombs were dropped together with steel wire and then the striker was not armed. Also there were the strikers that allowed the explosion of the bombs only a few hours after the impact. They were composed of large bottles often greenish glass which were screwed to the bombs during the flight. If the mission canceled the gunner-gunner had to unscrew them very carefully and throw them off the plane, possibly at sea. Colonel Robinsos (American trainer) used to say: *"As long as you have on board the bombs, you work for your government, after having dropped you work for yourself"*. The medium bombers lent itself very well to the destruction of relatively small targets such as a bridge, an ammunition dump, a concentration of troops. For this reason, the B-26 flying in tight formation at a height of 3,000-4,000 meters. This type of training allowed, on the one hand, a good defense from enemy fighters and on the other an almost instantaneous concentration of explosive material above the lens.



The relative accuracy of US bombers was due to the fact that were provided Norden viewer which, even if not to use too simple, however, allowed to hit the target with a certain precision. To bomb the bridges was adopted a special technique. Starting, of course, from an altitude of 3,000-4,000 meters, the goal was to be approached at right angles and in the middle. For this type of bombardment, the basic element was a compact formation of six B-26 consists of two flight of three aircraft. At the time of Pearl Harbor, the small fleet of B-26 available was the 22nd BG, which was first sent to Hawaii, then sent to Australia on 3 stages for 9000 kilometers, so that three planes were unable to complete, of 51 posted , that path. The series of raids on Rabaul cost by about 40 aircraft in 1942, half of which shot down by the enemy. Then they were replaced by B-25. While the Pacific was 'contracted' to B-25, B-26 were sent, among countless tribulations, in Europe, and their debut was in North Africa, where they had 2,700 sorties with a loss rate of 2.5% with the 9th Air Force. From Europe's first mission against targets in the Netherlands, it flew in mid-May 1943 saw twelve planes in action and no one returned. The low-flying missions were too dangerous for even faster B-26, unmistakable in their form of 'flying cigar' which brought them closer to G4M Betty Japanese, but difficult to fly. Among other things all their performance in fact had been



affected by the increase of constant weight. He had been a plane, despite the amendments, was still not convincing as a pilot quality. The medium altitude missions became more affordable for the B-26 and in the spring of 1944 could be seen even at a time raids with 398 units; during the last year of the war they worked with 29,000 missions, 46,000 tons of bombs and thanks the barrel Norden and missions at altitudes of about 3,000 meters and passes, obtained only 139 losses and the best accuracy among American bombers. They became in fact a deadly weapon, although towards the end had to do with the Me.262 who obtained several victories against the Marauder. After the war, already around 1946, the B-26 was eliminated from the USAAF service, but many had been exported and had a certain career, for some time, with the RAF and SAAF as well as with the free French. The Marauder finally matured as a means to the occasion, but there were many regrets when he was disbarred. Until 1944 all American planes were camouflaged with a green olive painting on the back and pale blue on the belly. Planes built after that date, however, were devoid of paint and then aluminum color (natural metal). 1946, with the delivery of the last B-26, also marked the end of this bomber.

The units located in the various theaters of war, the end of World War II, were not repatriated to the United States but started directly to scrapping. Especially those who had served in the European theater were brought to the town of Landsberg, near Monaco of Bavaria, where they were destroyed and aluminum given the catastrophic situation of the European countries, recovered for civil. Il thousand aircraft uses that were instead , still on American soil used in the pilot schools, or to tow the aerial targets, they were rounded up in storage sites, the best known of which was in Walnut Bridge in Arkansas, at the disposal of the usual scrap dealers. Even the British and the South Africans, after the war, they threw down their B-26.



Only France kept intact its fleet of Marauder using them as transport aircraft. But the lack of certain spare parts, now virtually unobtainable, accelerated their disposal and the consequent destruction: the excellent aluminum made in the USA could well be time to become good pots and pans. However, two specimens of Marauder belonged to the French are on display in many museums. Already since 1954 the USAF Museum in Dayton (Ohio) was desperate for a B-26 Marauder to enrich its collection. But only in

March 1963 that the museum director was aware that in France there were still two copies of B-26 in good condition. It was organized an exchange and the French swapped their B-26 against a DC-3. In 1965 the aircraft was disassembled and transported with every precaution in the US on a cargo C-124 Globemaster, where he was patiently reassembled. It was the B-26 G-10 MA-No. 43-34581 to which Americans, operating a small false history, applied aviation white star USA and the number of their squadron bomber. However, a sign reminds visitors, who are in the presence of a Marauder belonged to the French. The other model, the B-26 G-25 MA-No. 44-68219, was sent to the "Musée de l'Air et de l'Espace" in Paris - Le Bourget, where from July 30, 1998, is proudly displayed near the most famous Concorde.

## Versioni

**B-26:** prima versione di serie; 201 esemplari costruiti.

Alimentato da due motori radiali Pratt & Whitney R-2800-5 da 1.850 hp (1.380 kW) ciascuno. Poteva trasportare fino a 5.200 libbre (2.359 kg) di bombe.

Il velivolo era armato con sole 4 mitragliatrici:

- 2 nella torretta dorsale
- 1 nel muso
- 1 nella posizione di coda.

Era il più veloce di tutte le versioni, raggiungendo 315 mph (507 km/h) alla quota ottimale.

**B-26A:** dotato di motori R-2800-9 o R-2800-39, di serbatoi maggiorati e predisposizione per un siluro (esternamente, sotto la fusoliera del peso di 907 kg); venne passato da 7,62 a 12,7 mm il calibro delle due mitragliatrici nel muso; 139 esemplari costruiti. Altre modifiche inclusero un nuovo impianto elettrico a 24 Volt (precedentemente era a 12 Volt) e un sistema di ossigeno a bassa pressione.

**B-26B:** motorizzato con i R-2800-41 e con tutte le mitragliatrici portate al calibro di 12,7 mm; costruito in 1.883 esemplari, che dal 642° in poi ebbero apertura alare e impennaggio verticale maggiorati rispetto ai precedenti.

- Nel 1943 208 B-26B vennero modificati con la sigla AT-23A o TB-26B e destinati all'impiego di traino bersagli e addestratori al tiro; alcuni esemplari furono impiegati dall'aviazione della Marina e designati JM-1.
- A loro volta alcuni JM-1 vennero trasformati in ricognitori fotografici con la sigla JM-1P.
- 12 esemplari di B-26B furono convertiti in trasporti (assegnati al US Marine Corps e impiegati nelle Filippine) con la sigla CB-26B.

**B-26C:** impiegava motori R-2800-43; del tutto simile alla versione B, ma costruita negli impianti della Martin a Omaha (Nebraska); prodotto in 1.235 esemplari.

- Trasformazione di 350 B-26C in trainatori di bersagli o addestratori al tiro con la sigla AT-23B o TB-26C.

**B-26F:** versione con angolo d'attacco alare incrementato da 3,5 a 7 gradi. Questa configurazione ha fornito una migliore altezza da terra per le eliche, ha migliorato la salita, ridotto la corsa di decollo e la velocità di atterraggio. Sfortunatamente, la velocità massima è stata ridotta a 277 mph e le caratteristiche generali di gestione sono

leggermente degradate. Prodotto in 300 esemplari.

**B26-G:** molto simile alla versione F, in quanto differiva solo per gli equipaggiamenti interni.

Costruito in 893 esemplari.

- TB-26G: ultima versione destinata al traino bersagli o all'addestramento al tiro; in tutto furono prodotti 57 velivoli, di cui 32 girati all'US Navy e designati JM-2.

Nell'ambito del Lend-Lease Act del 1941, gli USA fornirono diversi esemplari del velivolo al Regno Unito; queste macchine conservarono il nome Marauder ma vennero denominate secondo lo standard inglese:

- Mk I: 139 esemplari di B-26A
- Mk IA: 19 esemplari di B-26B
- Mk II: 123 esemplari di B-26C
- Mk III: 200 esemplari di B-26F e 150 di B-26G

## News and curiosities

- It was the first fuselage aerodynamically perfect. An early nickname was "Flying Torpedo".
- Was the first combat aircraft to use plastic as metal replacement on a large scale: more than 400 shares.
- Was the first bomber of World War II to use a propeller with four blades.
- Was the first twin-engine bomber to carry more payload of bombs, followed by the B-17: 4,000 lbs.
- It was the first US fighter aircraft with self-sealing fuel tanks as normal equipment.
- Was the first bomber to use torpedoes at a Japanese fleet in the South Pacific, in early June 1942 during the Battle of Midway.
- The B-26 "Mild and Bitter" was the first Allied bomber to complete 100 missions in the European theater of operations on May 9, 1944.
- The B-26 "Hells Bells II" was the first Allied bomber to complete 100 combat missions in the Mediterranean on May 1, 1944.

## **Bomber B-26 Marauder n. 41-18048**

In the dramatic days of the summer of 1943 even the small towns had to experience the horrors of war. This is what happened in Sapri, Lauria, Maratea and Rivello, a small town in Basilicata which is located behind the last town in the province of Salerno. Until that time the war had affected Marginally these countries. Of course, many young people were called to arms, and some had lost their lives during the first three years of war. But those who stayed at home had to contend, so far, only against food shortages that plagued our nation exhausted by war effort. But after landing in Sicily, things changed abruptly. In preparation for the landing in Calabria and next to Salerno, the Allies began to bomb all the points that could be of strategic importance as a railway hubs, bridges, trunk roads. The aim was clear: cut supplies and escape routes to the enemy that they would face the aforementioned amphibious operations. At 13.05 hours of August 15, 1943 a formation composed of 41 American bombers, belonging to 320 ° BG took off from the air base of El Bathan in Tunisia, they darkened the skies of Sapri and the Gulf of Policastro: the defenseless population and unprepared tried to run for cover but it was too late. A rain of bombs fell on the station and the neighboring district of San Giovanni, killing some 40 people and injured over a hundred. By the commanders of the squadron reports it shows that the targets were railway wagons loaded with fuel at the stations. The morning of September 2 RAF planes flew over the area, to identify strategic targets to be bombed but also to control the movements of italo-german troops. On 3 September the allies they began the operation Baytown, landing on the coast far south of Calabria and intensifying actions against the major roads leading to Salerno. September 7 were bombed simultaneously Lauria that Sapri from two different Bombing Group, namely, the 321 ° with 36 aircraft took off from Soliman, Tunisia, he struck Lauria, while the 320 °, with 41 planes, returned to hit Sapri. In downtown Potenza civilians dead were 39. Sapri the population had taken refuge in the Timpone railway tunnel, also home to a military infirmary of the 18th Regiment Coastal. The bombs fell on the tunnel causing the collapse and killing nearly 50 people, civilians and military. A Rivello and the surrounding countryside, the population was in a panic: those who could fled to the countryside, many others took refuge in the caves of San Michele, in the historical center. The few brave souls who had remained open saw come from Sapri a big burning plane that crashed a few hundred meters from the town, in town Verneto. It was an American B-26 that had been hit by German anti Sapri. Shortly before they impact some of the crew managed to bail out. Who were these airmen? The documents collected by the surveyor. Nicola Manfredelli, local history buff who is very committed to shed light on this page of history, allows us to know them.

The pilot was Lt. Morris M. Thompson, freshman 0728131, born in 1920, in Spokane, Washington. Already July 17, 1943 his plane was shot during a mission. On that Thompson had made a water landing in the Tyrrhenian allowing all his men to escape on

inflatable dinghies before the plane sank. After 18 hours adrift had been recovered from a seaplane English Sunderland informed of the position of the castaways from the two aircraft formation that had followed the phases of falling overboard. Clearly something had not gone according to plan also right that on September 7 when his plane was about to approach in Sapri. In fact, as evidenced by the ratio of the flight leader, his bombs were the only ones to be launched before the lens finishing at sea. Maybe the plane had been hit by one of the many anti-aircraft batteries willing to protect the town and then the pilot had given the order to drop in order to take off again and evade enemy fire. The maneuver did not produce the desired effect because the shots had hit the right engine and ailerons. Consequently Thompson gave the order to abandon the aircraft. Upon landing he was captured by the Germans and deported to a concentration camp in Germany from which he was liberated at the end of the war. Morris died Aug. 29, 2012.



The co-pilot was Lieutenant R. Irvin Stuhr, serial 0668157, born in Rochester, New York, 26 April 1923. He was with the Lieutenant Thompson on the occasion of his first killing. In that circumstance he had been the only one not to be injured during the landing but, in the hours that had been in the water, had been stung by a jellyfish and the infection that ensued forced him to bed for several days. When the order was given to launch the plane dropped from the front with the pilot and Symons pointer. For about 36 hours he was able to avoid capture but was later arrested by the police near Trecchina. The soldiers took him along with Burgess Sergeant Padula where the command of the 7th Italian Army had set up a camp inside the Certosa. It was there that he learned of the Armistice Stuhr. A few days after the proclamation of the Germans tried to take custody of the prisoners detained for deportation to Germany. When the Italian guards realized their intentions did evade military allies from one of the secondary outputs. Stuhr and Burgess were treated kindly by the soldiers and civilians Italian leading them on the railway line that leads in Calabria (the Sicignano degli Alburni - Lagonegro) so that they could meet the Allied troops who were moving up the peninsula. After a few days they met Canadian soldiers they rifocillarono them and placed at the disposal a jeep with which they reached Catania. Here Stuhr found a B-26 just repaired but unmanned.

With the help of a fighter pilot who lost his plane and had the patent to drive even the bombers returned to his base in Tunisia just in time to prevent her belongings already packed, they were sent to his family in the United States since it was classified as missing. He was later returned and interviewed by the magazine of Kodak, the company for which he worked before being drafted into the army. The April 27, 1950 he married Miriam Jane Street and had three children. He participated in the conflicts in Korea and Vietnam. Returning to civilian life he worked for Boeing.

Irvin died Feb. 22, 2010.

The pointer was Sergeant William H. Symons, freshman 16068055, of Wilmette, Illinois. Once landed was taken prisoner by the Germans and shared the fate of Thompson.

He was deported to Germany in Stalag Luft 4 Gross-Tychow and then transferred to the near Wöbbelin from which he was liberated in the spring of 1945.

The technical board and was the gunner Sergeant Paul H. Burgess, freshman 15070928, Wheeling in Virginia. He, too, went into hiding but was captured on 8 September by the Forest Militia in locations Coccovello near Rivello. Conducted in the concentration camp of Padula followed ten. Stuhr during the escape and returned with him to the base.

The radio operator and gunner Sgt Frank was J. Gallagher, freshman 33169482, of Scranton, Pennsylvania. He had been wounded during the frantic abatement stages and captured by the Germans was robbed of all their possessions.

The fact that he needs care perhaps avoided being deported to Germany. In fact, the US documents show that at 20 December 1943 he was returned to service. Probably the place where he was hospitalized it was joined by the Allies before the Germans could deport him.

The gunner of the dorsal turret was Sgt Gene V. Gunning, freshman 19053354, Sacramento, California.

He was the only victim of the mission. The circumstances of his death are not clear. And relations of fellow squadron is the testimony given by Thompson after the liberation report that six men rushed from the plane in flames. Some local residents and the relationship of the Carabinieri say, however, that the body of an airman was found among the charred wreckage. Gallagher just left the unit before Gunning and reported that she had seen him while he strapped on a parachute. In addition, Thompson said that once he was taken prisoner showed a torn parachute and he was told that it belonged to one of his men who had died during launch. Finally Stuhr said that when he was captured, he saw a burning parachute and told him the Italian military aviator who was found dead at the point where the B-26 had fallen. Perhaps Gunning did not have time to jump from the plane on fire, or dashed, but the parachute did not work properly. He is buried in the Golden Gate National Cemetery in San Bruno in California.



## **Douglas A-26 Invader**

The Douglas A-26 Invader, also known as B-26 after the war, was a ground attack aircraft of the US construction used during World War II through the Vietnam War. It was the last project of attack aircraft from those entered World War II service and had a clear derivation from the A-20 of the same company, but introduced a more streamlined fuselage, more powerful engines and heavier armament. His career was affected by the delay with which it entered service with respect to the hostilities and the need to operate from a reasonably equipped airfields, given that it was a real medium bomber, rather than light. The postwar period saw him in action for decades in regional wars fought on several continents. By the company Douglas Aircraft Company in El Segundo (California) was born a project to replace the Douglas A-20, the North American B-25 and B-26 Marauder, was the birth of the A-26 project. The realization of the project was entrusted to the technical office which was headed by engineer Ed Heinemann with the collaboration. Robert Donovan in January 1941. Were built the first three prototypes, in June 1941, with roles as a bomber attack (XA-26-DE), night fighter (XA-26A-DE) and assault (XA-26-B-DE). The qualities of the aircraft to the power of the engine, the considerable load capacity in the hold and sub-wing, the defensive armament (two electrically operated turrets above and below the rear part of the fuselage) and the possibility of various configurations can be adopted in the nose were We suffered greatly appreciated by the USAAC. The first contract was signed October 31, 1941 for 500 aircraft. In July 1942, namely the day 10, the A-26 made its first flight from Mines Field in Los Angeles, with a more than positive testing. Initially also he met some design flaws, such as the cooling system, which forced him to eliminate aerodynamic warheads on propellers and a revision of the engine cowling. The production of the aircraft was deployed at plants in Long Beach for the version A-26B, while the version with the muzzle glazed A-26C in Tulsa. The night version hunting not even started, since the Northrop P-61 Black Widow had the best features for this role.

The first production of the A-26B-1 series was created by the establishment of Long Beach in September 1943. The production went from three prototypes presented to the USAAF, and XA-26B respectively (SN.41-19588), XA-26 ( SN.41-19504) and its direct derivative XA-26A. Xa-25B model was installed in the nose a 75 mm gun.



The model XA-26 was equipped with two motors in star Pratt & Whitney R.2800-27 2,000 hp; turrets (electrically operated) were equipped with two machine guns Browning M2 coupled da 12,7 mm, while two identical glass were installed in the snout; They could be stored in the hold 1,360 kg bombs under the wings, and at least 907 kg. The third prototype, the XA-26B was fitted with a radar AI in the bow, four 20 mm cannons were installed in a gondola under the fuselage; the lower rear turret was abolished, while the upper one had been maintained, the load capacity war of this model was only 907 kg. This model, however, was not produced, as mentioned, since the advent of the night fighter Northrop P-61 Black Widow designed specifically for this purpose. Production started with the type A-26B-1 (SN.41-39100), with minimal changes compared to the prototype; solid feature replaceable bow was kept for many models; in fact, it allowed countless versions of armament, although the A-26, the most widely used version is proved that with six 12.7 mm machine guns front. They could be mounted if required also the "Stubs", who were underwing gondolas inside with two machine guns always Browning M2 12.7 mm. The improvements also riguardarono the load capacity of fuel from 3,975 to 6,056 liters and the increase of the load bombs up to a maximum of 2,720 kg; these features essentially followed the model A-26B-50, who rode both R.2800-27 radial engines that Ford R.2800-71. In version A-26B-45 is tried to install a motor that R.2800-79 with a particular water injection system led to the power level of 2,370 hp. In version A-26B-30, used mainly in the Pacific, eliminating the lower turret is brought to 7,700 liters of fuel capacity, allowing a significant increase of autonomy that the operations theater required. The end of the war saw XA.26D make a prototype with a Chevrolet engine R.2800-83 leading speed of up to 650 km / h. The contract to build 750 copies was not then put into production because of the end of the conflict. The Invader development does not end with the end of the war, but with several modifications, was also adapted for civilian use. In particular the company of air renovations On Mark Engineering produced several versions for civil purposes such as Marksmann A with R.2800-83AM3 engines from 2,100 hp and Marksmann B version R.2800-CB-16/17 engines AM3 2,500 hp. The transport capacity ranged from 6 to 12 passengers, with pressurized cabins. Even the Lockheed Air Service company produced a civilian version that could carry 9 to 13 passengers, with the elongation of around 2.9 meters of the fuselage; Furthermore the set up was equipped

with ladder and panoramic windows enlarged. The first planes were sent to the front were four types of apparatus A-26B, assigned to the 13th Bombardment Squadron of the 3rd Bomb Group in New Guinea. For that type of use was not a happy beginning, problems underwing pod, inadequate visibility for use at low altitudes, and poor inimicarono speed crews and controls on its use that continued operations with B-25 and A. 20, parking the new A-26. On the European front (use from September 6, 1944) conversely, there were significant appreciations, probably due to a more suitable use of the vehicle. higher altitudes, good maneuverability to the same, the possibility of a substantial load offensive were much appreciated. In addition to pilot an A-26 was much less tiring than an A-20 or a B-26, also saw the grueling shifts of employment that the European offensive in place required.

The first assignment (18 aircraft) was the 553rd Bombardment Squadron of the 385Th Bomb Group based in Great Dunhow on English soil. The 416th Bomb Group of the 9th Air Force received in November 1944, the complete change of the aircraft A-20 Havoc with A-26, new aircraft were deployed on November 17 already in Germany. Gradually substitutions other interested departments of A-20 and Martin Marauder like the 410, the 409, the 386 and the 391 Bomb Group. Of note in the meantime the improvements applied both as regards the visibility is increased autonomy for the long-range obtained to the detriment of the lower turret eliminated, which made the apparatus more efficient, to the point that was heavily used in many incursions on the front Pacific with the rising sun, and in particular in China and Ryukyu. Fortunately now the second world war ended by pausing the use of this medium bomber succeeded, but not terminandone career. In fact, after a few years the A-26 shots in the Korean War (1950-1952), in the Panama Canal, and in the Vietnam war (1966-1969) and in the Algerian war (1959-1960), confirming its longevity.

He was retired from service in 1972 to the USAF.

## Tecnica

The fuselage was semi-monocoque type, the structure was with bulkheads and ribs reinforced with spaced apart longitudinal tubes (30 to 60 cm), reinforced in areas of high stress with profiles. In the main fuselage it was made on the pilot's seat and close the front desk attendant pointing, while the tail section was placed the gunner to the dorsal and ventral turrets with electric drive. In the structure there were several removable bulkheads to facilitate the repair and maintenance of the aircraft. The coating was in Aclad with layered panels to obtain a remarkable structural strength. The first version of the A-26 was equipped with two Pratt & Whitney radial engines of 2,000 hp R.2800-27. As an alternative was available engine Ford R.2800-71 carrying some mechanical improvements compared to P & W. From the series A-26B-45 became available the R.2800-79 model, using a water injection system, it carried the power up to 2,370 hp. In version A-26B-71 it could also be installed R.2800-83 a Chevrolet engine, with a consequent increase in speed from 520 km / h to 650 km / h.

Also tested was a version with General Electric turbojet J.31, located in the rear fuselage but did not lead to significant performance improvements and was abandoned. Towards the end of the military career was also installed an engine of 2,500 hp, it was the R.2800-52W model. The hydraulic system of the A-26, operated the landing gear, the brakes, the doors of the bomb bay. The total amount of the hydraulic liquid was about 8 gallons (301 liters) of fluid. Two hydraulic pumps (one for each motor) provided the operating pressure from 850 to 1,000 lb / m<sup>2</sup> (4,150 to 4,890 kg / m<sup>2</sup>) for the system. They were also provided solenoids for emergency stop; in case of fire, in the plane it was also place an emergency hydraulic system powered by a hand pump installed to the right side of the driver's stand, to activate the descent of the trolley and the opening of the bomb bay. The power system was formed by self-sealing tanks with fuel boost pumps with electric drive installed at each tank. Two main tanks with a capacity of 300 gallons (1,364 liters) installed in each engine nacelle. Inside the wings two auxiliary tanks were installed (one per wing) with a capacity of 100 gallons (380 liters) each. Installed in the upper part, before the bomb bay was an additional tank with a capacity of 125 gallons (473 liters). On the plane were two independent systems for each engine nacelle. In each of these there was a tank which contained 39 gallons (148 liters) and another reservoir with a normal capacity of 30 gallons (114 liters). The hydraulic pump driven by the engine was mounted on the rear side. The dispensing unit with relative cooling device made head mounted to an external radiator to the engine and the cooling air received by a special air outlet in the wing.



On some A-26 pressurized, the oxygen system was installed to provide a capacity of three man-hours for each crew member to 15,000 ft (4,600 meters). For models equipped with solid muzzle additional tanks were installed in the nose itself. The operating pressure of the container was about 425 lb / m<sup>2</sup> (2.070 kg / m<sup>2</sup>) of oxygen. The typical heating and ventilation system of this aircraft was constituted by two autonomous heating systems and ventilation. The same were installed, one for the front section and one for the gunner compartment. Both used two Stewart Warner conditioners from 40,000 Btu which were fed from a fuel - air mixture withdrawn from the high pressure side of a blower compressor. The hot air was then spread through the sewage systems to crew positions. The brakes had been provided with an alternative air system to that of hydraulic system, conceived as emergency brake. In the event of hydraulic system failure, it could be activated the compressed air system. The fire extinguishing system, one for each motor, was constituted by a thermal fuse element that in case of fire liberated carbon dioxide of three cylinders from 2.3 kg placed in the fuselage near the bomb bay, which erogavano the extinguishing in a special circuit to the motors. The A-26 was equipped with different types of cameras to electric command and reconnaissance cameras, both of the type K-24 or American English F-24; the same could be installed in the aft fuselage section in a special support for the camera. These radios were normally installed on the A-26: for communications, the radio device SCR-274-N with three transmitters and three receivers. The three transmitters, BC-457-A, A-BC-458 and BC-696-A, were installed in a console on the left side of the cockpit behind the pilot's seat. The wing features of this aircraft are to be found in its middle wing with thin profile to minimize aerodynamic drag. Despite the thin airfoil it was possible to install underwing nacelles for weapons (machine guns, rockets, bombs) creating a significant number of the offensive load configurations under the wing. They were located in the wing itself up to 6 machine guns Browning M2 12.7 mm. Some versions were equipped with fuel tanks at the ends of the wings to increase autonomy. The Committee for the Defense American National Air (NACA) recommended the use of new aluminum alloy 75s, which guaranteed a significant weight saving, and, in the realization of the structure with laminar method, a remarkable resistance to stress. For the A-26 it was also used duralumin 24S alloy Alclad. The duralumin 24S is an alloy was composed of 4.5% copper, 1.5% magnesium, 0.6% manganese. While the 75S alloy, it is composed of 5.6% zinc, 2.5% magnesium, 1% copper, 0.3% chromium. The flaps of the double-slit type were electrically operated, with a futuristic profile that ensured superior to A-20 model lift (about 30%).



## Armament

Initially the XA-26 was equipped with two turrets with twin Browning M2 12.7 mm machine guns electrically controlled, two machine guns were also identical in the transparent nose. As regards the bombardment load of the hold is reached 1,360 kg and 907 kg could be fixed to the sub-wing attacks.

Alternatively in the cargo area could be mounted two torpedoes. In the night fighter version four guns 20 mm were mounted in a ventral outer container, for greater effectiveness of fire. All at the expense of the load of bombs coming down to 907 kg.

Some versions were fitted in the nose a 75 mm gun. The armament versatility and configuration of the same are to be found as a major aircraft peculiarities. Some configurations were produced as:

- Six 12.7 mm machine guns (four on one side and two on the other) in the solid nose
- A 75 mm gun on the right side of the face as opposed to two weapons 12.7mm
- A 75 mm gun on the right side of the face as opposed to a 37 mm
- Four 12.7 mm machine guns opposite the muzzle of a gun 37 mm
- In some cases, two 37 mm cannons in the increasingly solid snout

In the XA-26C version it is decided for four 20 mm cannons in the nose. Very often in the "stubs" or in underwing nacelles, weapons of various types were mounted increasing firepower. Other facilities are also versions with underwing attacks with 14 rockets HVAR type. In versatile muzzle he came to mount even eight machine guns Browning M2 da 12,7 mm with devastating firepower for ground attacks. In recent versions in military use the spacious snout also housed a radar AI Mk.10.









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